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TWENTY-SIXTH ANNUAL REPORT

OF THE

Illinois State Beekeepers' Association

Organized February 26, 1891, at
Springfield, Illinois

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Compiled by
G. H. CALE
Hamilton, Illinois

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ILLINOIS STATE JOURNAL CO.
SPRINGFIELD, ILLINOIS
1927

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LETTER OF TRANSMITTAL.

OFFICE OF THE SECRETARY,
HAMILTON, ILLINOIS, *May 1 1927.*

To His Excellency, Len Small, Governor of the State of Illinois:

SIR: I have the honor to transmit herewith the Twenty-fifth Annual Report of the Illinois State Beekeepers' Association.

G. H. CALE, *Secretary.*

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TWENTY-SIXTH ANNUAL REPORT

OF THE

Illinois State Beekeepers' Association

For 1926

OFFICERS OF ILLINOIS STATE BEEKEEPERS' ASSOCIATION FOR 1927.

DR. A. C. BAXTER - - - - - - - - President
Springfield.

A. L. KILDOW - - - - - - - Inspector of Apiaries
Putnam.

E. A. JOHNSON - - - - - - - - Vice-President
Peoria.

W. H. FORCE - - - - - - - - Vice-President
Champaign.

W. K. GALEENER - - - - - - - - Vice-President
Vienna.

E. A. MEINEKE - - - - - - - - Vice-President
Chicago.

L. PETERSON - - - - - - - - Vice-President
Kewanee.

ELMER KOMMER - - - - - - - - - Treasurer
Woodhull.

G. H. CALE - - - - - - - - - Secretary
Hamilton.

List of members in back of report. Also index.

MINUTES OF THE TWENTY-SIXTH ANNUAL MEETING OF THE ILLINOIS STATE BEEKEEPERS' ASSOCIATION— SPRINGFIELD, ILLINOIS, DECEMBER 9–10, 1926.

Meeting called to order by President A. C. Baxter.

Minutes of last meeting read and approved.

Addresses were made by the following: E. M. Warren, of the A. I. Root Co., of Chicago; E. R. Root, Vice-president of the A. I. Root Co., Medina, Ohio; L. T. Floyd, Provincial Apiarist, Winnipeg, Manitoba; George Rasmussen, Secretary Champaign County Beekeepers' Association; V. G. Milum, University of Illinois; Jay Smith, Vincennes, Indiana; A. L. Kildow, State Inspector of Apiaries; J. H. Parman, Curator, Davenport Academy of Sciences; M. G. Dadant, Dadant & Sons, Hamilton, Illinois.

Report of Treasurer and recommendation of acceptance by auditing committee approved.

Report of State Apiary Inspector A. L. Kildow given.

Report of Secretary read and approved.

Voted to approve the proposed changes in the foulbrood law as outlined by Inspector Kildow, to prevent the movement into the State of bees on combs or used bee supplies without a certificate of inspection; to prevent the movement of bees on combs or used bee supplies within the State without a permit from the Inspector; to prohibit the keeping of bees in box hives or other hives incapable of examination.

Voted that a resolution be made registering the protest of the Illinois State Beekeepers' Association against the Corn Sugar Bill being considered by Congress.

Voted that the premium list at the State Fair exhibit be changed so that the amounts of honey required be reduced to permit the entry of a greater number of beekeepers.

Committee appointed by President Baxter to cooperate with him in this consisting of M. G. Dadant, Elmer Kommer and A. L. Kildow.

Voted that some attempt be made to arouse interest in the State of Illinois in the grading of honey with the future object of establishing some means of grading to better our marketing conditions.

Voted that M. G. Dadant be made the representative of the Association at the convention of the American Honey Producers' League, at New Orleans.

The following officers were elected for 1927: President, A. C. Baxter; Secretary, G. H. Cale; Treasurer, Elmer Kommer Vice-President, A. L. Johnson, Peoria; Vice-President, W. H. Force, Champaign; Vice-President, E. A. Meineke, Chicago; Vice-President, W. H. Galeener, Vienna; Vice-President, Lawrence Petersen, Kewanee.

RESOLUTIONS APPROVED AND ADOPTED AT THE TWENTY-SIXTH ANNUAL MEETING, DECEMBER 9–10, 1926.

1. BE IT RESOLVED, That the Illinois Beekeepers' Association in convention assembled, at Springfield, Illinois, hereby registers its protest against the passage of the so-called Corn Sugar Bill now under consideration by Congress. We believe that this bill is an entering wedge into the present pure food law, which will tend to destroy the protection which honey producers have enjoyed under the law in the assurance to the public that honey is absolutely pure.

That a copy of this resolution be spread upon our books and that a formal protest from our Association be sent to the legislators in Congrss from Illinois.

2. BE IT RESOLVED, That a vote of thanks be extended to the Hotel Saint Nicholas for its continued interest and for its cooperation in allowing the use of its parlors for the meeting as it has done for so many years past.

3. BE IT RESOLVED, That the Association extend thanks to the officers who have served so faithfully and to all those who have taken part in the program of this convention.

4. BE IT RESOLVED, That the Association, in convention assembled, advocates reductions and changes in the present premium list for honey exhibits at the State Fair in order to open the list to a larger number of beekeepers.

REPORT OF THE TREASURER FOR 1926.

RECEIPTS

Dec. 29, 1925—Received from L. A. Allen, former Treasurer.	$213.62	
May 1, 1926—Received from G. H. Cale	177.25	
Oct. 18, 1926—Received from G. H. Cale	176.77	
Oct. 18, 1926—Received from Glenn Glass Warren Co.	5.00	
Dec. 2—Received from G. H. Cale	12.25	
Total receipts for year		$584.89

EXPENDITURES

Vouchers from No. 1 to No. 11, as follows:

Voucher No. 1—Elmer Kommer, expenses Executive meeting May 7	$ 19.91	
Voucher No. 2—G. H. Cale, expenses Executive meeting, May 7	24.24	
Voucher No. 3—Elmer Kommer, Executive meeting at Fair	22.01	
Voucher No. 4—G. H. Cale, six months' salary, July 8	100.00	
Voucher No. 5—C. D. Adams, expenses Northern Tour	10.00	
Voucher No. 6—Mrs. L. Watson, honey food candy	5.58	
Voucher No. 7—D. C. Gilham, honey nut candy	6.50	
Voucher No. 8—G. L. Sauer, Polo, third of dinner	5.00	
Voucher No. 9—G. H. Cale, three months' salary, Oct. 28	50.00	
Voucher No. 10—G. H. Cale, Executive meeting, Fair	17.00	
Voucher No. 11—G. H. Cale, salary fourth quarter	50.00	
Total expenditures		$310.24
Balance Dec. 9th		$274.65

ELMER KOMMER, *Treasurer.*

REPORT OF THE AUDITING COMMITTEE.

We, your Auditing Committee, have examined the books of your Treasurer and find same correct as presented, with a balance in the treasury of $274.65.

M. G. DADANT,
A. L. KILDOW,
Committee.

REPORT OF THE SECRETARY FOR 1926.

No one who has not undertaken the duties of Secretary of the Illinois State Beekeepers' Association has an appreciation of the amount of work to be done in the proper conduction of this office. Few associations enjoy the Governmental support which has been so generously extended in Illinois and pursuance of many projects is allowed which ordinarily would not be undertaken.

This makes it necessary, therefore, to master a volume of details which have to do with the expenditure of our money. The number of reports and blanks that have to be submitted regularly to the offices of the State government are bewildering to a novice and it takes considerable time to become efficient in this procedure.

The high standard of efficiency set by our previous Secretary made it necessary for his successor to become familiar with many things before he could conduct his office properly. It is said that if a thing is to be done well it should be given to a busy man. That may be correct in substance but as a matter of fact the Secretary has found it hard to perform his duties effectually with the needs of his own business also before him. At all times, however, the interests of the Association have been kept prominent in all possible ways and, once having learned the way to carry on, it becomes increasingly easy to take care of Association business.

It has been impressed upon me during the past year that it is indeed unfortunate that Illinois does not have a well established extension service in apiculture from its State University. The number of calls coming in for help in local meetings and in all sort of programs have been far greater than the possibility of taking care of them. Although a few speakers have been provided for local meetings in different parts of the State and the Secretary has himself attended quite a number of them, only a small amount of the work which should be done along this line has been accomplished.

We are fortunate in having Mr. V. G. Milum at the University now. Most of our beekeepers have become familiar with Milum and have grown to like him and to become convinced of the sincerity of his attempts to help them with their problems. Mr. Milum has spent considerable time in extension work, although there are no funds or provision made for carrying this out as it should be done. We are satisfied that the University would be willing to attempt this kind of work if the beekeepers from different parts of the State would demand it insistently and unitedly enough to allow the authorities there to seek the proper means of providing for it.

Due to the fact that we have insufficient means of taking care of all the requests of local associations for programs and meetings, it was decided last fall at a meeting of the Executive Committee that the next season, 1927, we would favor local meetings held on consecutive dates, in a series, so that it will be possible for speakers obtained to visit them with the least loss of time and funds. If Associations will bear this in mind when making requests for help it may be easier to help out more often than heretofore.

There have been three meetings of the Executive Committee during the current year (1926), all held at Springfield; one to determine the activities of the Association during the summer period; one during the week of the State Fair, to plan the efforts to secure a continuation of the Association funds for the next biennium and means of support for inspection funds, and the changes in the present inspection law. A third meeting was held on December 8, just before the annual meeting, to determine matters of business to be brought up at that meeting and details of the program.

The assurance has been given that the biennium of $2,400, usually appropriated by the Legislature in the budget, will be continued for the next two years. I have just received a report from the Department of Finance to that effect and feel certain that the money will remain as stated. We are also told that the inspection money is assured and it seems quite probable that the revisions asked for in the law will be put through without trouble.

In spite of the unfavorable season which prevailed in most parts of the State last year, the membership of the Association has continued between 750 and 800, which makes it one of the largest enrolled memberships of any state.

The issuance of the monthly report, started by Mr. Dadant, has continued to be one of the most interesting features to members. The present Secretary has found it difficult at times to get out this report promptly and so three issues of 1926 were omitted altogether. The amount of cooperation in compiling this report has been quite disappointing. Local secretaries, inspectors, and others interested in a public way in beekeeping should furnish news notes for the Bulletin and, although these have been asked for repeatedly, no one but Mr. Kildow and Mr. Milum have yet given anything at all to help with this little paper.

It is published primarily in the interests of members and little news notes of any kind with a homelike flavor will be acceptable.

L. T. FLOYD

Provincial Apiarist
Manitoba, Canada.

SOME FACTS FROM THE FAR NORTH.

(L. T. Floyd, Provincial Apiarist, Manitoba, Canada.)

We in Canada feel a decided connection between ourselves and the United States. Between the east and west in Canada there are 1,000 miles of muskeg and rock which separates the two parts of the country. On the western Canadian prairies barnyard manure is of no value whatever because the soil is already of high fertility. Stories of western Canada are not believed.

We have long winters but the fact that we can readily get package bees from the south leaves us with no worry. It is easily possible to establish packages in the prairie provinces and harvest a 200 pound crop from them the same year. Last year there were 10,000 packages shipped in from the southern states and it seems to me that there will always be a market for southern packages in Canada.

The apparently wild stories that have been told about beekeeping possibilities in the provinces have created an unusual interest in this occupation. Such stories as the increase of a few colonies in a season to several times their number, with the harvesting of a large crop of honey, soon find ready ears everywhere. It was one of these early stories that produced a sudden and intense interest in beekeeping. That fall a short course was given in Winnipeg and hundreds turned out. The daily papers covered it and the next day the evening papers, so the following meetings were of record attendance.

We held a series of field days, getting Mr. Frank C. Pellet, Associate Editor of *The American Bee Journal,* up to help us. He followed this with a story about beekeeping in the provinces, which we sent out to the home address of every member of parliament and to all the newspapers. This gave our work a mighty good standing and enabled us to continue it successfully.

Manitoba is as yet scarcely populated. The early settlers came out to grow wheat and trap furs and in 1926 the value of the furs was over $3,000,000 and there were over 400,000,000 bushels of grain. The population is largely from the United States and from eastern Canada. We never thought of bees until these first successes as described above.

We are now interested in spreading the gospel of diversified farming. Grain forming does not build up homes. The results of this has been such that last year we exported 315 carloads of butter. It is not easy to raise fruit in Manitoba, so the demand for honey is good. We have champion farmers in this north country. One of our farmers secured the caulflower championship, one the vegetable collection championship, and another in the far west won the wheat and oats championship.

This is a land of great disappointments to some and yet it is a wonderful country and the possibilities in it are truly great. Honey production in 1921 was only 500,000 pounds but this had increased in 1926 to 4,000,000 pounds. At our annual convention last year we had over 300 interested in beekeeping, and 100 of them were good sports enough to pay $1.50 for a banquet given in the evening. We believe that the publicity given in the daily press is of great value and balances that given in the bee papers.

Four circulars are sent out a year to our beekeepers, one in April on the registration of apiaries. Some do register but if all were made to do so, as the law requires, it would take all our time for administration. However, it helps furnish information. Second, in September, a letter is sent out suggesting a minimum price which should be asked for honey. Third, in October, a letter of inquiry concerning the honey crop, and a cordial invitation to our annual meeting, is the last letter sent out just before the event. From these letters we are able to keep our mailing list revised and up-to-date. We also send out a letter to wholesalers on the amount of honey on hand and prices. They do not like this but it gets a better price for our beekeepers and helps connect things up.

We have no foulbrood. Some has come in but it has disappeared. There is no wax moth in the country—it is too cold. The climate is dry and it is perfectly possible to winter outdoors. Most of the bees, however, are put into cellars about November 1 and stay until the 10th of April, sometimes till the first of May.

Most of our honey is sold in the granulated form. It granulates so quickly that there is no use to try to sell it liquid.

Half the population of the province is in Winnipeg. Taking advantage of this, we planned last year to give away honey at the Garden Show. Fifty beekeepers agreed to give ten pounds of honey each and we got about 750 pounds, finally 1,000. This was put into half pound jars. About each jar was wrapped a list of the donors. We kept the report constantly in the city papers that we would give away half a ton of honey at the Garden Show and we kept the 2,000 samples piled for three days at the entrance, with a poster announcing that the honey was to be given away on "Honey Day," with a line—"This Honey Beats the World." It certainly was a success. We had a hard time keeping the crowd away and we believe it was the best advertisement that could possibly have been pulled.

Sweet clover is our main honey plant. The soil is light and black, so alsike does not do well on it. A haycrop is harvested as the clover comes into bloom, and the second crop is left until after the grain harvest and so yields well, sometimes a scale hive showing a 25 pound increase in a single day. The hay and dairying business are fine for beekeeping.

Sweet clover honey in this country is water white, sparkling in appearance, and has a wonderful flavor. It granulates especially fast when gum weed is in bloom. There is some alfalfa. While grain farming will probably continue to be of first importance, interest in mixed farming will also increase rapidly.

We ask a dollar for a five pound pail of honey. The question arose of pooling our honey and organizing a cooperative marketing association. We have established the beginnings of this but there is not enough interest to insure its continuance. It will not be like the wheat cooperative, which last year sold 212,000,000 bushels of wheat.

We sent out 1,200 circulars to beekeepers and only 22 signed up, and yet it passed by vote in our beekeepers' meeting. Only two of these twenty-two were large producers, two were preachers. It fell entirely flat, not one-half a car of honey being assured altogether.

The need to sell cooperatively must be vital. It is not possible to sell cooperatively on a local market, although it is entirely feasible to supply an export market by cooperative effort.

Honey goes rapidly in this north country. It is nothing for a housewife to scoop out half of a ten pound pail at one meal and have it all gone when the meal is over.

WHY BEES SWARM.

(By Jay Smith.)

Would it not be interesting if we could look away, way back and see the first swarm of bees that ever issued? When that was, away back in the dim past, we can only wonder. Crude drawings have been found on the walls of caves, made by the cave man, long before our written history begins, showing the cave man trying to "rob" the bees of their hard-earned sweets, showing it takes more than 10,000 years to change human nature. Mighty sorry the cave man did not write a bee book and leave for us. No doubt the cave man, 10 or maybe 50,000 years ago, looked with wonder as the bees swarmed and the question, "What makes them swarm?" came to him.

According to the Geographic Magazine, honey has been found in sealed jars in the tombs in Egypt, showing that the Egyptians liked honey. After 3,000 years the honey was still good. And we may conclude that as the Egyptians watched their bees they asked this question: "What makes them swarm?" So this question has come dowwn to us and is still being asked. Beekeepers have been looking for the reason or the one condition under which bees swarm. It seems to us that the reason is simple. It is merely the peculiar manner that the bees have been carrying out the Divine injunction, "Increase and multiply and replenish the earth." However, there are certain conditions present when this swarming takes place, and if we would prevent swarming we must see that these conditions or factors are not present in the colony at the same time. There are several conditions that must be present before swarming takes place. There is no one reason, but several. To the person who believes that there is only one reason, let it be said that there may be present any one of these conditions, and if the others are not present there will be no swarming.

Probably the greatest reason for swarming is the crowded condition of the brood nest. Yet we could take away most of the brood and crowd the bees till they clustered all over the outside of the hive and still there would be no swarming. Again, we might have the hive crowded with bees and brood, still if there were no pollen or nectar coming in, or rather if this should be cut off entirely by a heavy frost, for instance, there would be no swarming unless the bees had already made preparations to do so.

I remember, in my early experience with bees, I had heard that if a colony were weak and had plenty of room they would not swarm. So when a colony wanted to swarm I killed their queen and made increase, putting one frame in each hive and seeing that they had one or two queen cells on each frame. Imagine my surprise to see a swarm issue

JAY SMITH

Vincennes, Indiana.

from one of these nuclei! I remember I wondered just how weak a colony had to be to keep it from swarming. But there was one factor present I had not taken into account, and that was the fact that they had already made up their minds to swarm, before I divided them.

It has been stated that if the bees have plenty of room they will not swarm. They will not swarm so often, and there will be a greater number that will not swarm if they have plenty of swarms even if abundance of room be given. Dame Nature seemed to take into account the fact that many swarms would find large, hollow trees and great caverns in the rocks, yet Nature proposed that they should increase.

Some have said that when a colony gets strong it will swarm. Large numbers of bees in a hive is one of the elements that cause swarming, yet unless other conditions than a large number of bees are present, there will be no swarming. As an experiment, a colony was built up to about 200,000 bees by giving brood from other colonies. This colony was permitted to have all the factors that go to produce swarming present, to see, if it were forced to swarm, whether it would build queen cells larger than when the swarming impulse was not present. This colony cast a 25 pound swarm, and we estimated that not half the bees went out with the swarm. The swarm was returned to the hive from which it came, cells removed and more room given, when the bees remained content in the hive and did not offer to swarm again.

Now what are the principal factors that cause swarming? I will give them in the order of their importance as I believe them to exist: A crowded condition of the brood nest; a large amount of brood in the combs; hive crowded with honey, fresh nectar and pollen, and a light stimulative flow of nectar from the fields; colony headed by an old queen.

If we wish to prevent swarming, we must endeavor to have as small a number of the above named features present as possible. In comb honey production, it is difficult to keep swarming within reasonable bounds. Years ago, when producing comb honey, I used to start the colony off in producing extracted honey, then when the flow was well on and the swarming period past, I raised the extracting super and placed comb honey supers underneath. This gave very good results. I also used extracting combs at the outside of the comb honey frames, which reduced swarming and caused the entire super to be finished at about the same time. Then if the colony had a young queen, there would be little swarming, but still swarming was not entirely prevented.

In the production of extracted honey, the control of swarming is much more simple. Many methods have been resorted to, to relieve the congested condition of the brood nest. One of the most common methods is to place the queen with one frame of brood in a hive, filling out the remaining space with empty combs, then placing another hive body containing the remainder of the brood on top of the first hive with a queen excluder and under the top hive as the honeyflow comes on. This plan is reported generally successful, provided it is done before the bees have the swarming notion. If they have already started cells, they will usually swarm and go out with the old queen. This plan scaters the

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bees and therefore relieves to a certain extent crowded condition in the brood nest. If empty combs are inserted between the frames of brood, it will usually entirely prevent swarming.

However, these methods leave considerable to be desired. By scattering the brood and bees in this manner the queen does not lay as she would had she been left in the brood nest as she had arranged it. If this scattering is done before the swarming fever is on, it interrupts brood rearing to such an extent as to materially weaken the colony near the close of the honeyflow, when it should be strong.

A number of years ago I noticed that in taking bees away from certain colonies for use in the swarm box, those colonies kept up brood rearing much better than those from which no bees were taken. The bees, evidently feeling that they were not strong when the bees were taken from them, kept the hive filled with brood. After being out 24 hours the bees were returned. I also noticed that the cell-finishing colonies, where extra brood from other hives was given, continued to rear a large amount of brood, while other reared much less. It was also noted that these colonies never swarmed. I attributed both the continuation of brood rearing and the non-swarming tendency to the fact that the extra brood given above drew up out of the brood nest both old and young bees. Although the population of the colony may have been 150,000, yet, as the brood nest was not crowded, the queen continued to lay in order to crowd it before swarming.

Observing this trait, I was anxious to try it on other colonies to see if it would prevent swarming. I went to 24 of my strongest colonies that were to be used for extracted honey, and gave them extracting supers with empty combs. Then I went to some weak colonies that had old queens and took from them all of their brood. Two frames of brood were placed in each extracting super. The result was that the nurse bees were drawn up from the crowded brood nest to care for the brood. There being empty combs between these frames of brood, these frames were also occupied by other bees. The next day after treating these colonies I observed that many of them were killing their drones, showing how completely they had given up the idea of swarming.

While they were doing this, other colonies not so treated were building cells preparatory to swarming. In one or two cases colonies that had cells started tore them down when brood was given above. Another very desirable feature with the colonies so treated was that they continued to fill the hive with brood. The above method I have used more or less for a number of years, and never had a colony swarm when so treated. The weak colony, with an old queen, of course, did not swarm, for all the brood had been removed. This causes the old queen to lay her best to build up the colony. This is what I term "draining the queen of her last eggs." As soon as she has what brood in the hive that we can put there the colony is requeened. Usually by the time the brood above is hatched the honeyflow is on in earnest and no further danger of swarms.

From the above it can be seen that the fact that a colony is strong in numbers does not mean that it is more apt to swarm than a colony not so strong, but the great future is to draw the bees out of the brood nest. Empty combs alone will not accomplish this, but frames of brood with no adhering bees given from another colony will accomplish several desirable objects. It will start the bees to work in the supers; it will prevent swarming; it will cause the queen to continue to lay, and it will make the colony stronger by giving the extra brood.

CONTROLLED MATING OF QUEENBEES ESTABLISHED ON A WORKABLE BASIS.

(By G. H. Cale.)

Students of the history of beekeeping know that many claims have been made by overenthusiastic workers that they had found a way to control the mating of queenbees, but none of these claims have been verified. There are probably only two or three reported instances where the experiments were of any value.

In the *Journal of Experimental Zoology, Vol. 31, No. 2,* George H. Bishop gives two extended papers on fertilization in the honeybee, the facts of which were developed from a series of unsuccessful attempts to fertilize queens artificially. This is the most exhaustive account which has so far appeared on the morphology and physiology of mating in the honeybee.

In commening on his attempts at controlled mating, Bishop reports entire failure. He used two methods. In one, he forced extrusion of the drone's organs under pressure into the queen, held in juxtaposition. Secondly, he dissected out the fluid of the drone and injected it with a pipette into the organs of the queen.

George D. Schafer, in *Technical Bulletin 34,* of the Michigan Agricultural Experiment Station, gives a study of the "Factors Which Govern Mating in the Honeybee." He tried two ways of bringing the queen and drone together. Each bee was fastened at the end of a fine, elastic wire halter and then allowed to fly, the halter giving such freedom as would permit flight to continue and still the operator could govern their movements enough to keep them together, face to face. No matings were secured, although the drone often clutched the queen. By the other method, the operator tried to evaginate the male organ into the vagina of the queen by bringing the insects together, inserting the tip of the drone's abdomen into the queen and causing expulsion by the pressure of the thumb and finger. No matings were obtained by this method either.

Among earlier investigators, N. W. McLain seems to have been ably prepared for his work. In the *American Bee Journal, 1888, page 487,* McLain gives a report of an experiment in controlled mating in a large cage. Queens and drones appeared to fly in this cage with freedom and be observed several cases where the queens and drones embraced, but they quickly separated. Of many scores of trials, he claims that six were successful. Lack of further results is blamed to the impotency of the drones, which he believes due to unfavorable climatic conditions.

Apiary of Dr. L. R. Watson, at Alfred, New York, where controlled mating was accomplished.

CONTROLLED MATING OF QUEENBEES ESTABLISHED ON A WORKABLE BASIS.

(By G. H. Cale.)

Students of the history of beekeeping know that many claims have been made by overenthusiastic workers that they had found a way to control the mating of queenbees, but none of these claims have been verified. There are probably only two or three reported instances where the experiments were of any value.

In the *Journal of Experimental Zoology, Vol. 31, No. 2,* George H. Bishop gives two extended papers on fertilization in the honeybee, the facts of which were developed from a series of unsuccessful attempts to fertilize queens artificially. This is the most exhaustive account which has so far appeared on the morphology and physiology of mating in the honeybee.

In commening on his attempts at controlled mating, Bishop reports entire failure. He used two methods. In one, he forced extrusion of the drone's organs under pressure into the queen, held in juxtaposition. Secondly, he dissected out the fluid of the drone and injected it with a pipette into the organs of the queen.

George D. Schafer, in *Technical Bulletin 34,* of the Michigan Agricultural Experiment Station, gives a study of the "Factors Which Govern Mating in the Honeybee." He tried two ways of bringing the queen and drone together. Each bee was fastened at the end of a fine, elastic wire halter and then allowed to fly, the halter giving such freedom as would permit flight to continue and still the operator could govern their movements enough to keep them together, face to face. No matings were secured, although the drone often clutched the queen. By the other method, the operator tried to evaginate the male organ into the vagina of the queen by bringing the insects together, inserting the tip of the drone's abdomen into the queen and causing expulsion by the pressure of the thumb and finger. No matings were obtained by this method either.

Among earlier investigators, N. W. McLain seems to have been ably prepared for his work. In the *American Bee Journal, 1888, page 487,* McLain gives a report of an experiment in controlled mating in a large cage. Queens and drones appeared to fly in this cage with freedom and be observed several cases where the queens and drones embraced, but they quickly separated. Of many scores of trials, he claims that six were successful. Lack of further results is blamed to the impotency of the drones, which he believes due to unfavorable climatic conditions.

Apiary of Dr. L. R. Watson, at Alfred, New York, where controlled mating was accomplished.

Mating laboratory in Dr. Watson's apiary.

Again in the same journal, Vol. 23, 1887, McLain reports securing one mating out of six, and later three out of six among bees similarly confined in an enclosure. Others have reported matings in still closer confinement under glass or cloth covered compartments with freedom for flight allowed each day.

Shuck, in the *American Bee Journal* for 1882, page 789, reports looping a thread ten feet long about the waist of a queen and attaching it to an eight-foot pole. He says in less than a minute several drones were pursuing the queen and finally one of them caught her and mating occurred. From his experience, he discredits the success claimed for mating in boxes, tents, or similar devices.

McLain *(American Bee Journal, 1887, page 567,)* gives a lengthy report of a careful experiment in controlled mating in which the queen was clamped to a mating stage, the male sperm removed from the drone and injected into the vulva of the queen. Of 27 queens thus treated he repots six as successful. He expresses regret, however, that, although he was persistent in his efforts he only met with success occasionally.

It is quite probable that McLain did secure results, but is is also highly probable that his matings were all partial. His article, "Controlled Fecundation in Queens," is well worth reading.

Jager and Howard, in *Science, N. S. No. 1037, page 720,* report succeeding in controlling the mating of one queen. In his Michigan bullet, Shafer gives 25 references to mating experiments on the part of 17 different investigators. Many other reports have been made that were probably entirely without foundation.

It now seems quite certain, however, that one of our most recent investigators in this subject, Dr. Lloyd R. Watson, of Alfred, New York, has succeeded in developing a method of controlling mating which is proving quite continuously successful in his hands. The writer has followed Dr. Watson's work for several years with considerable interest and much in detail.

He is well trained for the problem, especially in the sciences, particularly chemistry, organic and optical, insect anatomy, biometry, microscopy, biology, genetics, and labaratory methods. It has always been in the back of his mind that, when he had opportunity, he would study artificial insemination.

Dr. Watson is a graduate of Alfred University, New York State, where he became a teacher of chemistry for seven years, later branching off into beekeeping work in the Connecticut Agricultural College, at Storrs, Connecticut. From there he went to the Bee Culture Laboratory, at Washington, D. C., and was State Apiculturist of Texas for one year, finally returning to the Cornell University, where, for the past three years, he has been pursuing graduate study for a doctor's degree in genetics in the Department of Plant Breeding, under Dr. R. A. Emerson.

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so many investigators. He did not hestitate to push his way into it at once.

I visited Dr. Watson in Alfred last year to learn, if I could, the possibility of his securing results from his experiments. It was my opinion that he would succeed, although most of his scientific colleagues offered him no particular support and were practically all of the opinion that he had undertaken a task in which he would have little chance of success.

Since I have known Dr. Watson for a decade and knew the unusual quality of his technical skill, I left his laboratory with confidence that he would solve the problem of controlled mating. His methods and technique have been developed so thoroughly that he is meeting with unexpected success. The details of his apparatus and procedure are set forth in the thesis for his doctor's degree at Cornell University, published by the *American Bee Journal.*

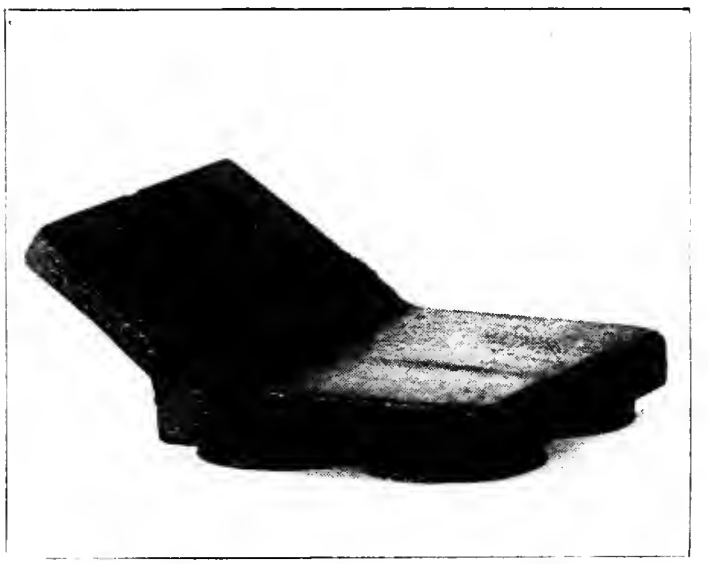
On October 5, 1926, before an examining committee of Cornell University, Dr. Watson gave a complete and acceptable demonstration of his methods and apparatus and his results. He gives a delightful account of this occasion in a letter to the writer, from which the following quotations are taken:

"A day or two after sending you my last letter I heard from Dr. Emerson of my examining committee, advising me that as soon as I had a generation of hybrid bees by my method he would like to have a demonstration of the technique before him and other members of the faculty. At the very time I received his letter I had the desired generation of hybrid bees emerging. In view of the lateness of the season and of the fact that in many of the hives of the yard the bees were actually pulling out sealed brood, on Monday, the 4th, I wired him that I would be at his office on Tuesday morning, the 5th, for the demonstration.

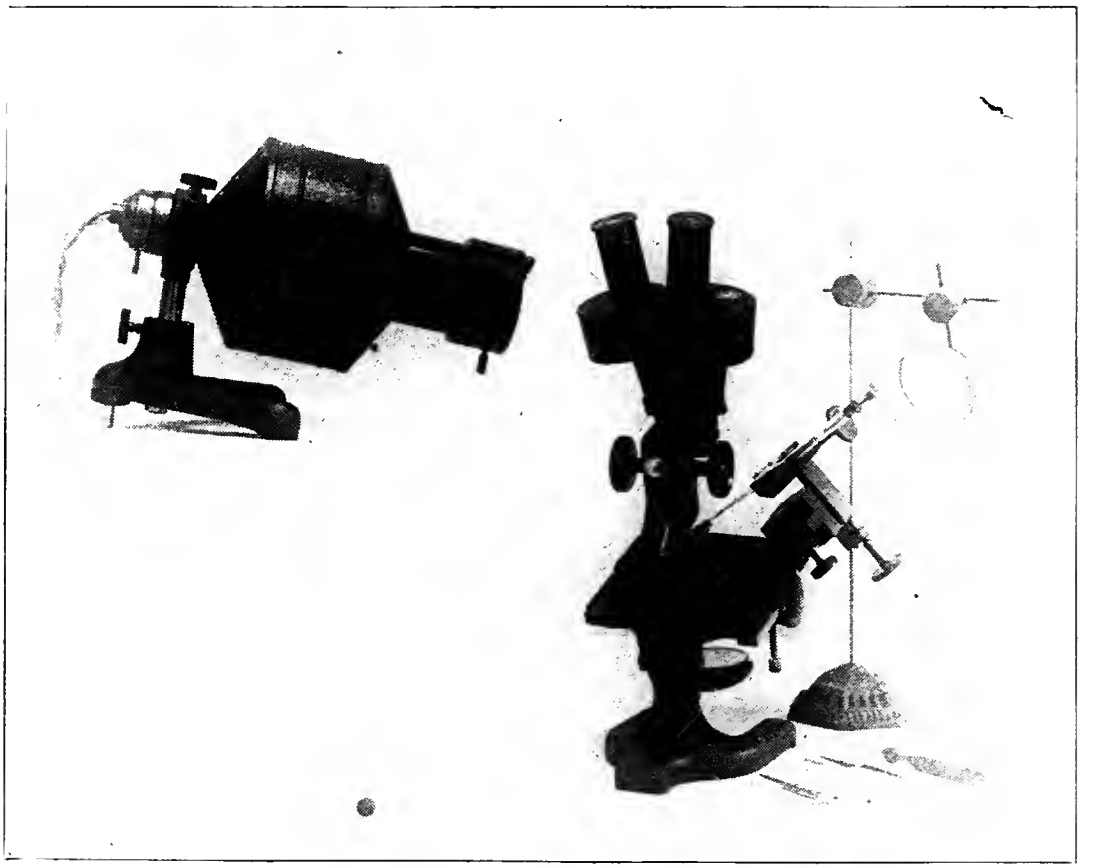
"The demonstration had been arranged for 10 o'clock on Tuesday, and as soon as the building was open, at 8, Huber and I were there to begin the task of setting things up and getting every item in perfect readiness. When the appointed hour struck, our preparations were complete with queens, drones, and artificial hybrids, arranged in order and ready for whatever might come.

"There were quite a number of people present besides the immediate faculty, under whom I have worked for three years. The finest of spirit pervaded the whole period, which lasted nearly two hours. I am glad that all the entomologists were there for, in spite of the fact that they watched closely and questioned me profusely, I seemed able to satisfy them on every point. At the end of the two hours, I asked if there was any part of the work that anyone would like to see repeated and Dr. Emerson (my professor in the Department of Genetics), rose, saying he believed he voiced the sentiments of everyone present that the demonstration had been so clear and convincing at every step that there was nothing further to be desired. It all seems like a dream to me."

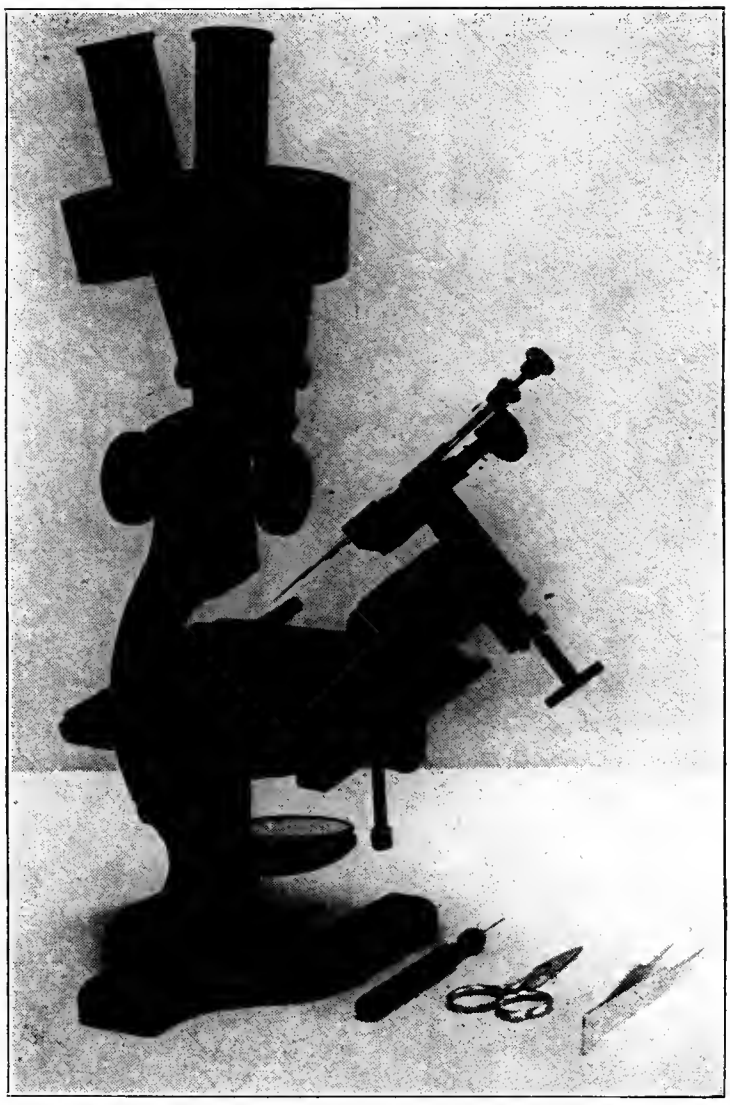
Although Dr. Watson's method is remarkably successful, he declares that it needs refinement before any large percentage of the queens sub-



Bed on which queen is tied for mating.



Lamp, reflecter, microscope, syringe, and instruments for mating.



Micro-syringe, pipette holder, tweezers and needle for opening queen, and scissors for clipping after mating is accomplished.

jected to treatment will be as perfectly mated as they would be by natural means. However, the progress made so far is an agreeable surprise. In writing of his work during the past season, he says, in one report:

"One artificially inseminated queen is laying beautifully and her first brood is just now being sealed with the normal flat cappings of worker brood. Another queen, a sister of the former, has been laying vigorously for two weeks, but the cool weather and a dearth of nectar have caused the attendant bees to destroy her brood as fast as she produced it. A post-mortem examination of her spermatheca reveals the fact that she had been partially inseminated. Under post-mortem, a third sister showed an abundantly normal insemination. A fourth sister, treated on the same day and by the same technique, showed partial insemination.

"Other queens, treated on other days, are behaving normally and look promising, but is too early to know what the results will be. Day before yesterday I treated nine virgins. Today I sacrificed three of them and, in all cases, I found a condition of partial insemination. Yesterday I treated eight virgins, and today I dissected four of them and found a condition of partial insemination in three and in the fourth a copious supply of normally active sperm." A later report says that fully normal hybrid workers resulted from the laying queens.

Most of this work has been done at Dr. Watson's home apiary, since he has been a beekeeper for a long time and it was possible to assemble his materials here to better advantage than at the University. Permission for this non-resident work was secured from Dr. Emerson, of Cornell.

There is a wide interval between Mr. Watson's experimental work and the queen breeder's apiary but, with this initial success establishd and with a continuation of the work, we have the assurance that some of the problems in breeding and race improvement will yield more easily to solution.

THE NEW RECENT DANGER TO OUR HONEY BUSINESS.

(*E. R. Root.*)

There is something wrong about present conditions. Although the market for honey the past fall was not good we could get no clover honey at Medina. It was not to be bought. Probably the real trouble was the fact that many of the larger beekeepers in the west were not able to meet their financial demands and so had to cut the price of their honey to do so. As a result, honey came down to rock bottom. The trouble with this is that low prices will not pay notes. Over 200 carloads of honey were unloaded on the market from California.

A second trouble is the agitation about diseased honey and the attempts on the part of states like Louisiana to secure the certification of honey. There is a decided danger to certification because of the publicity which will be given to it in newspapers. Like Samson, it will pull down the house about our ears.

An example of its danger is given in the story of a beekeeper who formerly sold $5,000 worth of honey and a story which appeared in local news channels on disease spoiled his market to such an extent that he could not sell over $300 worth of honey the following season. It is a hard job to refute this sort of publicity.

A third difficulty is the fact that the housewife thinks that honey is adulterated glucose and such measures as the Cole Bill, now before Congress, emphasize this. This measure should never be allowed to pass and it will need the cooperative efforts of all beekeepers to prevent it from doing so.

The prospect for a crop has never been better than for 1927 and this brings up one of the biggest problems we have had, one which we must take hold of. It will take considerable education among the women, who are the largest buyers of our product, to remove much of the misunderstanding they now have about honey. Many buyers are still doubtful of the purity of honey, both comb and extracted.

There is too little proper understanding of how honey should be cared for. Too often it is put in the ice box.

The sugar consumption of the American people has increased from 80 pounds to 102 pounds per capita while honey consumption has increased only slightly, from 1½ to 2 pounds per capita, annually. We must preach the virtues of honey and stir up interest in it.

This is easy to do. A display of live bees in the store window always creates interest in honey. We must also overcome the prejudice against honey and give widespread information on the uses of honey.

THE VALUE OF GOOD QUEENS.

(By E. M. Warren.)

Having good queens is just a matter of common sense. Good is only a comparative term, however, and some beekeepers may think that black bees are good bees. One must see Italians to know what Italians really are. Sometimes gentleness is just a matter of careful handling.

In the selection of good queens, the following points should be considered: Non-swarming, gentleness, prolificness, gathering ability, comb building, vigor, hardiness, resistance to disease.

The time of introduction has some influence on the efficiency of queens. Usually August is the best time. First, because queens introduced at this time usually bring a colony up in the spring to its peak just right for the honeyflow. Secondly, spring introduction slows up the peak of brood rearing so that colonies are not in good condition.

Increased production, from a close study of management, will go a long way in helping solve out marketing problems and a good queen is an essential part of this plan.

FAMILIAR HONEY PLANTS.

(By J. H. Paarman.)

At the annual meeting J. H. Paarman, of the Davenport Academy of Sciences, gave a very interesting talk on the honey plants of the middle west. It would be impossible to remember or note all the interesting facts he gave, but a resumé is presented here:

Onion Honey—Considerable honey comes from this source around Moline.

Raspberry—In a few places in the middle west, raspberry is of some importance.

Buckwheat—In northeastern Iowa there is some buckwheat honey reported.

Eupatorium (boneset, Joe pie weed)—Quite common throughout all this region.

Tulip—In southern Illinois 1 per cent of the forest is tulip and it is of some importance there.

Tupelo Gum—In southern Illinois, in four counties, 22 per cent of the forests are Tupelo gum.

Black Gum—Three per cent of the slope trees in north central Illinois are black gum.

Black Locust—This is a nitrogen gatherer and most common of all the planted trees in Illinois.

Hard Maple—Eighteen per cent of the trees in the bottom lands are hard maple and 4 per cent in the uplands.

Wild Black Cherry—Of some importance.

Oak and Hickory—From 80 to 95 per cent of the trees are oak and hickory. They are much more plentiful here than elsewhere in the country.

In the early group of plants, we can mention the soft maple, elm, pussy willow, spring beauty, cottonwood (Carolina poplar), black elder, ash, dandelion. Fruit blooms, including apricot, pear, gooseberry, cherry. Bluebells, Japanese barberry, sour crab, hawthorne, redbud, Norway maple, willows, honeysuckle, both tartarian and white.

Of these the cottonwood, ash and willow have the male and female as separate individuals.

Interval Period—The following honey plants are of importance: Dutsia, black haw, sheepshank, false indigo, columbine, black mustard, wild black and choke cherry, wizelia, black locust, honey locust, grape, blackberry and raspberry, ninebark (golden spirea), tulip tree.

Main Honeyflow—The following are important: Red clover, white clover, alsike.

Dandelion, one of the early bloomers, and of great help with both pollen and nectar for brood rearing. It is common in Illinois.

Red clover is a very valuable yielder.

Yellow and white sweet clover, basswood (linden), catalpa speciosa, wild rose, elder, sumac, meadow rue, hop tree.

Summer Interval—Bergamot, horsemint, catnip, germander (wood sage), motherwort, matrimony vine, hollyhock, loosetrife, New Jersey tea, onion, vervain, woodbine, milkweed, thistle, sunflower, Culver's root, buttonbush, Indian tuft or rosin weed, cucurbits, burdock, jewel weed, partridge pea (extra floral), ironweed, clematis, buckwheat.

Fall Flowers—Boneset, Joe pie weed, white snake root, late flowering thoroughwort, sneezeweed, smartweed, golden rod, day lily, burr cucumber, bootjack, Spanish needle, bidens cerna, aster, New England aster and many flowered aster.

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THE NORTHERN ILLINOIS BEE TOUR.

During the past few years Illinois has been pulling herself out of the mud. With an original appropriation of $60,000,000 and a present additional amount of $100,000,000 for hard roads, highways that have no equal in any other state in the Union are being webbed across the once trackless hunting grounds of the famous Illini. They made the Tour possible since, rain or shine, the going was certain.

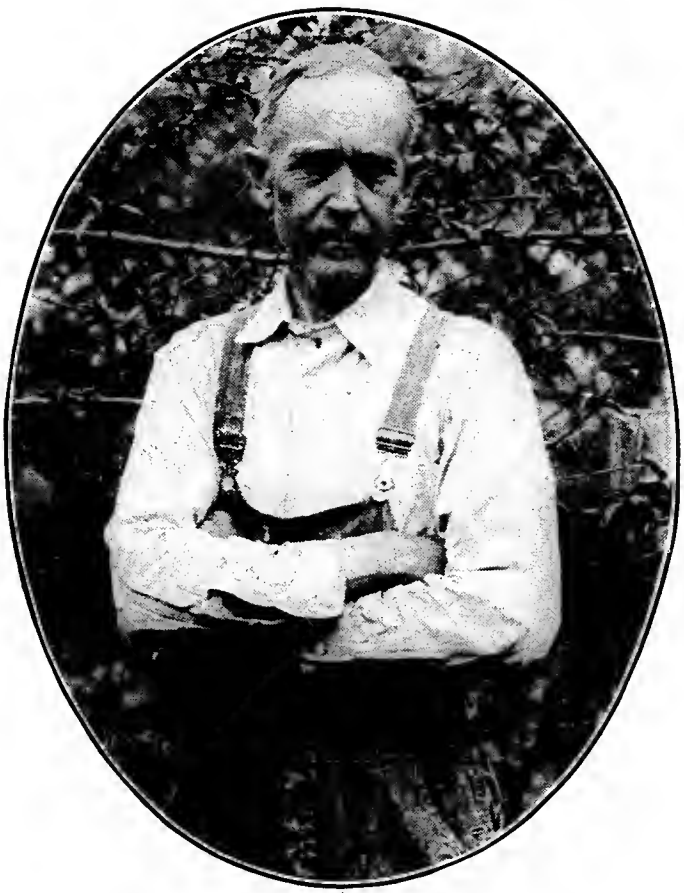
The Tour was patterned after the one held in Wisconsin. State Inspector Kildow proposed it early in the year and it was through his efforts and the help of the State and local beekeepers' associations that it was successfully completed. Individual beekeepers also gave considerable time and thought to the details in their respective localities. All through, the cooperation was wonderful and it is safe to say that at least one thousand beekeepers took part and are ready to vote it the best single event in the State in a decade.

The route of the Tour was from Savanna, on the Mississippi, east to Joliet, and south and west to Wenona, thence north to end at Putnam, about four hundred and fifty miles through the best beekeeping territory. Twenty-two stops in five days, from August 10th to 14th, with programs of interest, pleasant entertainment, and a lively crowd.

Space is too limited to give more than a brief mention of a few of the most interesting visits. At Savanna, C. S. Handel has a model apiary on a small place, where honey, vegetables and flowers produce a living for his family and spell happiness for the owner. A more beautiful home and grounds I have never seen. It is an inspiration to the visitor to copy.

For beautiful apiaries, however, there are few to compare with that of Lee Horning, at Malvern. Hard to reach, as it is somewhat off the main road, it is nevertheless well worthy of the effort. Every detail of the apiary has been planned with care and for beauty. Most hives are white, but Hornings are more than white. They shine in enameled purity, each on its stand of shouldered cement, straight lines on a lawn that rivals those of old England. English lawns are the pride of their owners and it is said that the only thing needed to produce them beyond seeding, is to roll them 300 years. How much rolling Horning has done I can't say, but his lawn is a gem.

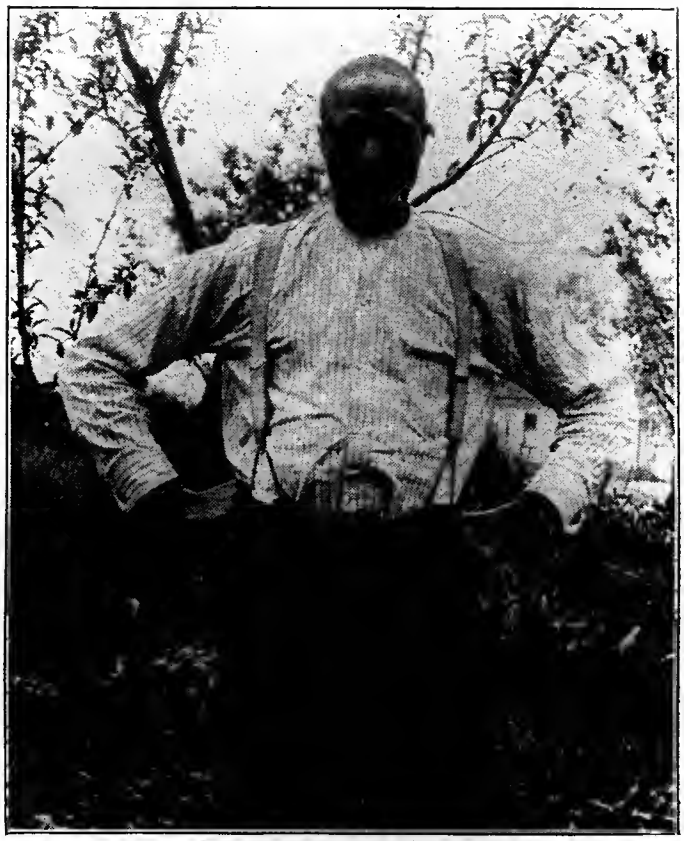
At the end of the apiary is a fountain in a bed of moss roses with the honey house beyond, one of those honey houses that produce exclamations of delight. Horning is a genius for fixing things to work with and any beekeeper, armed with a notebook, could get full pages from an examination of the equipment in the Horning honey house.



A. L. KILDOW

State Inspector, whose suggestion initiated the Tour.

Mr. and Mrs. Aaron Coppin, of Wenona, who entertained the Bee Tour. Mr. Coppin has one of the finest apiaries in Illinois and is one of the earliest members of the State Association.



J. C. CUNNINGHAM

Colored beekeeper, of Streator, whose apiary has given him good returns.

From Oregon to Byron, the Tour was along the Rock River, one of the beauty spots of Illinois. One thinks of this State of open prairies with visions of flat and fertile fields, but the Rock River country belies it. It is as splendid a panorama of woods and stream as the country affords.

It would be pleasant to write of more of the visits made, but four of the most conspicuous ones must suffice, that to Winkler's of Joliet, Ness' at Morris, Cunningham's at Streator, and Coppin's at Wenona.

Winkler does most things in a large way, though he is himself a little fellow. We did not see his bees but we did see his home, and that is, after all, the best reflection of what his bees have helped him to do. In the olden days the Winkler home would have been called a palace. Today it is just a house, but such a house as few of us will ever own: Spanish colonial mansion, picked bodily from the warm seaboard of Florida.

That it is his pride could easily be seen, as Winkler took the crowd through every corner of it; Spanish tile porch, with colonial entry, white rooms with magnificent finish, soft magnesite floors in the kitchen, double furnace heat, baths on all floors, a house replete with all that modern home building genius has been able to develop.

Winkler is second largest beekeeper in the State and bids fair to be the largest if his ambition holds out. L. L. Ness at Morris is the largest at present. Here commercial honey production is featured on a big scale. With one thousand colones of bees, situated in the sweet clover district, there is every incentive to develop along lines which result in an efficient system of management with suitable equipment to handle heavy crops. In our short stay, there was nothing unusual apparent in the way Ness cares for his bees. He likes the two-story, ten-frame hive system and can show its results, since he gets good returns.

His honey house contains the most efficient equipment that the industry now affords. The house itself is of one-story cement block construction, with cement floor, a house of generous dimensions, made along modern factory lines. The extracting equipment is most interesting. A motor furnishes power to an overhead shaft which furnishes power to a large extractor, and to the honey pump. The latter elevates the honey through pipes to a battery of big settling tanks, banked along the wall of the house. From these the honey is run into containers.

There are few places where sweet clover has received the attention that has been given to it in Grundy County, Illinois. The discovery and propagation of the early Grundy County variety of the biennial sweet clover has meant much, both to the farmer and beekeeper. This clover is somewhat finer than the common biennial and blossoms considerably earlier. The set of seed is very even, making it ideal for seed growing purposes. For the farmer, it is apparently just as valuable in rotation as the other varieties. So seed growing has been profitable and extensive in Ness' territory, and since the seed is now certified and finds a top notch market, it is likely that the industry will thrive in this region for a long time to come. The county agent, Longmire, at Morris,

is actively interested in the clover and has been a most influential factor in its spread.

At Streator, a visit with J. C. Cunningham was rich in human interest. Cunningham is a fine example of the best in the colored race. It is not particularly evident in his home, but rather from what the man himself has done. His bees have always been a side issue, taking their place next to the daily job, but they have brought their owner what the daily job could not bring, an education for his children and comforts for his home.

One cannot talk with Cunningham without gaining the impression that he has picked up a rich experience. He is a real "darky," but somehow a solid sort of a man, too. He leaves a feeling of confidence with all of his friends. His humor was most delightful, a colorful mirth which comes straight from the heart of the black race and seemingly at its best in this splendid representative.

Cunningham has a penchant for pretty bees. Though the hives in which they live are old and too little cared for, as their owner apologetically explained, the bees at the fronts were the most inspiring Italians I have seen anywhere. Cunningham testifies that they get the crops, too.

At Wenona, comb honey production can be seen at its best. Aaron Coppin has hewn to no standard but his own. His hive is a Coppin hive, his supers are Coppin supers, and his honey is distinctly Coppin honey, which has now won the blue ribbon at his State Fair for the twenty-seventh consecutive year. I will brag for him right here that no one will beat him for years to come.

I would like to add my bit to the praise of his worthy wife. She is one of the sweetest women I have ever met (if another man can call her sweet and get by with Coppin). I am willing to bet two nickels that Coppin's greatest blessing has not been with his bees and what they have brought, but his wife.

This account should not close without a word of respect to those who worked so hard to make the Tour a success. None of us will ever know all of them, nor what they gave of time and effort. Never was more royal entertainment given to any group of people than the beekeepers along the route of the Illinois Tour extended to the beekeepers who came to see them. Beekkeepers are a great bunch and every time they mix together they become just a little greater. Not one of the thousands who came and went during the five days would be willing to give up either the enjoyment or the worth that the Tour brought. Not one of them but wishes he had been with the crowd the whole five days, and, sitting back home, there are many hundreds of good beekeepers who missed one of the best things that may ever come out of their beekeeping experience.

Beautiful apiary of Lee Horning, at Malvern.

Closer view of the Horning yard with octagonal honey house in back.

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At Wenona, comb honey production can be seen at its best. Aaron Coppin has hewn to no standard but his own. His hive is a Coppin hive, his supers are Coppin supers, and his honey is distinctly Coppin honey, which has now won the blue ribbon at his State Fair for the twenty-seventh consecutive year. I will brag for him right here that no one will beat him for years to come.

I would like to add my bit to the praise of his worthy wife. She is one of the sweetest women I have ever met (if another man can call her sweet and get by with Coppin). I am willing to bet two nickels that Coppin's greatest blessing has not been with his bees and what they have brought, but his wife.

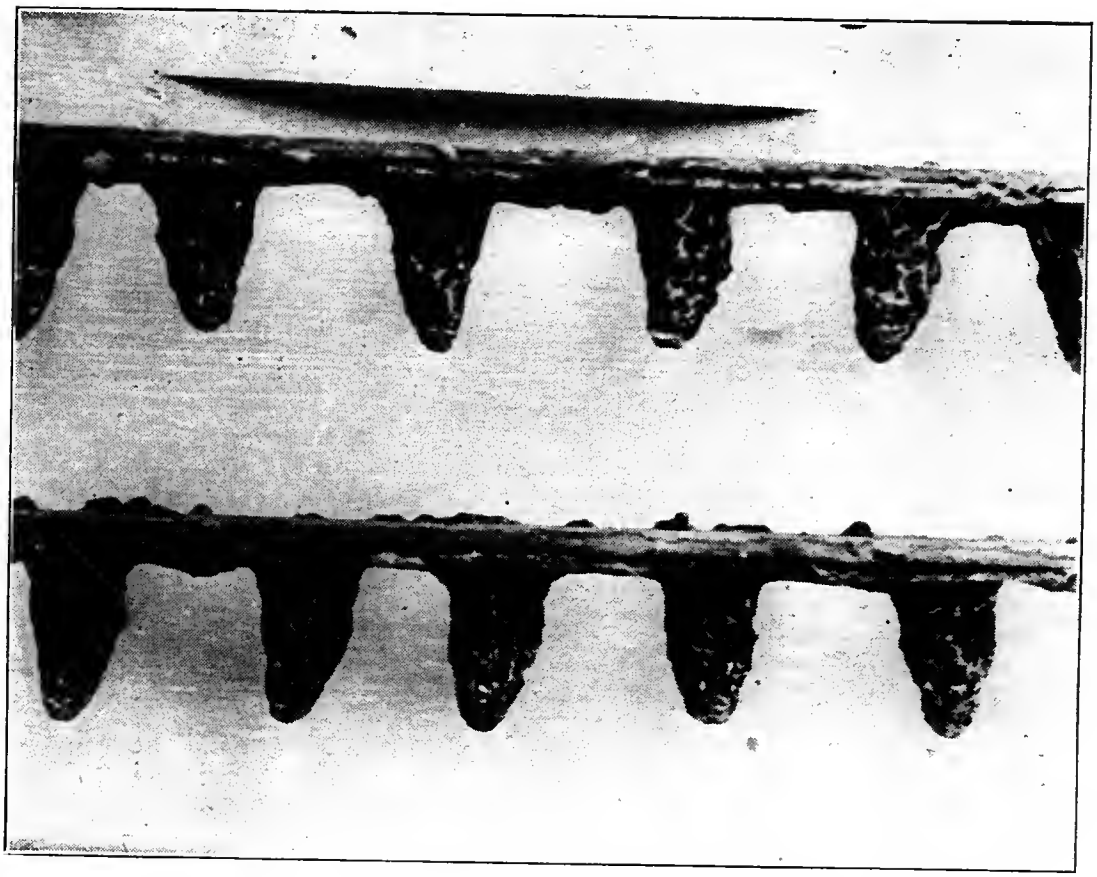
This account should not close without a word of respect to those who worked so hard to make the Tour a success. None of us will ever know all of them, nor what they gave of time and effort. Never was more royal entertainment given to any group of people than the beekeepers along the route of the Illinois Tour extended to the beekeepers who came to see them. Beekkeepers are a great bunch and every time they mix together they become just a little greater. Not one of the thousands who came and went during the five days would be willing to give up either the enjoyment or the worth that the Tour brought. Not one of them but wishes he had been with the crowd the whole five days, and, sitting back home, there are many hundreds of good beekeepers who missed one of the best things that may ever come out of their beekeeping experience.

Beautiful apiary of Lee Horning, at Malvern.

Closer view of the Horning yard with octagonal honey house in back.

Apiary of Earl Wilkinson, Stillman Valley, in large hives.

Group on Tour at Oregon, Illinois.



Ripe queen cells on cell bars as taken from finishing colony.

FACTS ABOUT QUEEN REARING.

(By Jay Smith.)

A poor queen costs three times as much as a good one, so it is best to pay for a good queen in the first place, as the price is paid anyway. Everything considered, no queen is better than those the beekeeper raises himself, whether he is a commercial producer or an amateur. Queen rearing is a detailed study.

The grafting method is the most efficient. The amount of royal jelly the queen has to consume during its development is of great importance and it is essential that as young larvæ as possible be used in grafting to give time for abundant feeding.

This food over a short period of time is what makes a queen. The royal jelly, containing predigested pollen and rich in vitamines, causes the larva to grow at a great rate. Many people fail in queen rearing because of a lack of food.

Study the habits of the bee in this respect. Every spring they first raise workers and then drones, and, when prosperity has come, they start queen cells. Let a honeyflow come and cell building stops. When the honeyflow stops, drone rearing stops. So we only get queen cells in the height of prosperity, when there are lots of bees, honey, pollen—food.

For the beginner it is best, therefore, to raise queens only during the honeyflow. In my twenty-five years of experience I have learned one thing, and that is to feed.

The amateur can use a modification of Dr. Miller's method if he wishes. Take a colony that wants to swarm and remove the brood and queen and give it a fine comb of eggs from the colony having the bees from which we wish the queens to come. The bees will go to work on this comb and the cells may be used when ripe.

When bees swarm there is always jelly left in the queen cells from which the virgins emerge. If there is no jelly left in your cells it may be because there has not been enough put in them by the bees, as is sometimes seen in queen cells that are post constructed.

The acceptance of cells is also a matter of food and there is no need of queen cell protectors if these little colonies are fed abundantly before the cells are given to them.

The Doolittle grafting method, using artificial queen cell cups is a good one. The cells are dipped, mounted, filled and finished according to his system, which is so well described elsewhere.

The dipping stick should be of a size just to fit into a drone cell and these sticks may be set up in a bottombar so that twenty cells may be dipped at a time. Have a tray of water to cool the cells and

then fasten them to cell bars. I have dipped 6,000 cells in a day in this way, using two pounds of wax, which I obtained by recovery of cells from my queen rearing yard.

When these cells are finished in the finishing colony, they can be cut and distributed at will. For small amounts of cells it might be better to buy a ready-made outfit.

Feed the queen rearing colonies four or five days in advance when there is no honeyflow. I use the two frame Doolittle division board feeder with galvanized iron shoulder. It holds about twenty-nine pounds of syrup. These feeders are boiled in paraffine, and have a lath float in them to keep bees from drowning. Keep the feeders full constantly.

To prepare a colony for queen rearing, make it extra strong at least twenty days before grafting. Build up two colonies side by side. Ten days later kill one queen and unite the two colonies, putting the queenless part above an excluder. This makes a tremendous colony. I had one of them swarm and the bees in the swarm weighed 25 pounds.

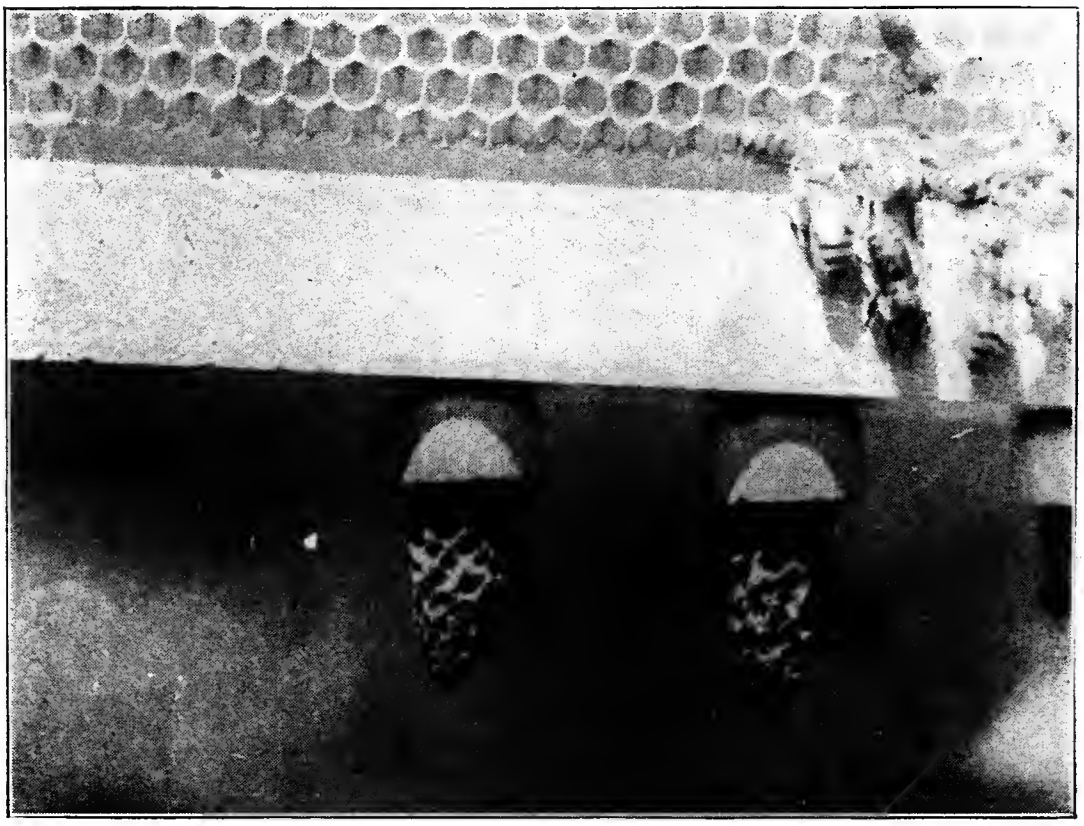
Grafting is a good job for girls. The usual way of putting jelly in the bottom of the cells to be grafted is to keep the larvæ moist, but I find that a wet towel over the cells and the larvæ grafted dry in the cells will also work well.

The bees will remove the jelly which you put in anway and add fresh jelly. It is necessary, however, to graft quickly and get the cells into the cell-building colonies at once. Keep the feeders full constantly until the cells are finished.

Graft about three bars, twenty cells each, early in the morning. We give three frames to each finishing colony, keeping the sealed brood constantly supplied above the excluder. Another way we have is instead of killing the queen in one of the two colonies which are built up side by side, put the queen and her unsealed brood on a stand at the back of the colony you are to use and give the most of the brood to the finishing colony. The entrance should be opposite the finishing colony. When the cells have been accepted return the brood to the first queen and so continue. Cell bars must be close together so combs will not be built below the cells. Have them only just a bee space apart.

On the tenth day in the morning, remove the finished cells, cut them off the bars and introduce them to the mating nuclei. The nuclei should have been fed the day before. I use a bottom board feeder for them with thick syrup. Also a small quart division board feeder about a half inch wide.

I sometimes feed these nuclei, give cells and in three days give another batch of cells to the same nuclei, to make sure that they will have a virgin. This can be done if you have plenty of cells.



Fine queen cells, in just the right condition to distribute to mating nuclei. (From "Practical Queen Rearing," by Frank C. Pellett.)

OUR DUTY TO THE PUBLIC.

(By Russell H. Kelty.)

The present social structure necessitates close inter-relationships. Modern development of communication and transportation has so greatly reduced the barrier of space that the West, the North, the South, the East have lost their definition.

The nature of our relations with others determines our reputation, and we, as beekeepers, will do well to pause a moment to consider what the public really thinks of us. If there are still large numbers of people who think of beekeepers as stooped old men with flowing whiskers and cane, who spend all their time fussing with a few hives of bees, then we should lose no time in telling the world how we go about the production of Nature's sweet.

What is our duty to the public? Considered from a broad viewpoint, we might say, "The production of the best possible quality of honey as economically as possible." And in consideration of the present status of the honey market, we might well add, "And see that the honey is efficiently marketed."

In a recent talk to beekeepers, Prof. J. T. Horner, of the Department of Agricultural Economics, Michigan State College, stated the case as follows:

"The problem of every business today, regardless of its nature, is that of selling. There would be little difficulty in securing a profit if the productive problems were the only ones with which the business man is confronted. Productive methods have improved so much because of the aid of science in the last hundred years, that is relatively easy to produce goods. The big job is to sell these at a price that will return a profit. However, it must not be forgotten that strict attention must be given to the productive processes. It is not easy to produce goods at a cost which will leave a profit; therefore, a business will not be profitable unless strict attention is given to the problem of production as well as those of selling."

The average beekeepers' attention has been devoted to production problems almost exclusively. And there is room for still greater development along this line. For, unless something can be done to raise the retail price of honey, profit in beekeeping must be derived from economy in production. This is in keeping with the trend of affairs in other agricultural lines. The dairyman is urged to produce more milk, not by increasing his herd, but by improving the production of his present number of cows.

Applied to beekeeping, this means the adoption of systems of management which will enable the beekeeper to produce larger averag crops from the same number of colonies. Our successful commercial beekeepers already have this faculty developed to a high degree. And they

are continually seeking improvements in practice and short cuts in manipulation.

But our beekeeping literature is full of production problems. To stabilize our industry, we beekeepers must lend the same zeal to a study of our marketing problems that we have in the past lent to bee behavior. To quote Prof. Horner again:

"I do not believe that we know enough about the honey market more than to make generalizations. A real study of this market is needed. Facts should be substituted for preconceived ideas and misconceptions. Do people like honey? What is the actual perc apita consumption of it? Why isn't more used? Is it used as a luxury or as a regular item in the diet? How much more would be used if the price decreased? How much less would be used if the price doubled? Why is honey used? Is it because people like it—think it is good for them—cheap, easily secured, advertised—or why? What would induce people to use more honey? What determines the price of honey (a) the price the consumer is willing to pay, or (b) the price the producer is willing to take, or (c) is the price set by wholesaler and retailer, or (d) is it set by custom, or something else?

Through what channels does honey pass on the way to the consumer? Is it feasible to sell at roadside markets, from house to house, mail order, to retailers, to wholesalers, or how?

I recommend a thorough study of the honey market with particular emphasis placed upon the consumer demand. The man who knows demand holds the key to a profitable market. What do the honey producers know about their market?

Let me repeat the last question, "What do the honey producers know about their market?" For the most of us, the answer would be brief. The majority of beekeepers feel that when the honey is in cases ready for shipment, their part is finished. But pick out the ten most prosperous beekeepers of your acquaintance. Are they not, invariably, good salesmen for honey? Do they not try hard to sell their crop at better than average prices? Isn't it true that they have spent much effort year after year, building up a trade for their honey?

The crying need of the beekeeping industry today is the development of the selling capacity of the beekeepers. For is it not true that, with the exception of areas of heavy production or thin population, if the possible demand were fully developed it would be unnecessary for the bulk of the honey crop to move more than one hundred miles?

Now, before any good salesman goes out to sell any product, he wants to know all about it—its goodness, usefulness, superior qualities, as compared with other articles already in use, who it will appeal to—children or grownups, or both, whether its sale will be seasonal or steady, how well it keeps, and finally whether it is a product which he can stand behind with a flat guarantee of service.

One of the oldest distributors of grocery lines, who have been in business for 70 years, have during the past year, based their advertising appeal on children's stories. Their "Teenie Weenie" full page ads have appeared in the Saturday Evening Post, Ladies' Home Journal and other magazines of wide circulation. When a house of such standing

finds it profitable to appeal to children is it not reasonable to suppose that beekeepers might profit likewise?

A local grocer, a Hollander, who likes flowers—and children, a few years ago started a little grocery in the outskirts of town. His flowers bloomed brightly and his business prospered, so much that he moved into a larger store. His business continued to grow, and one day the writer asked him what particular form of advertising gave him the best results. His reply was interesting. He said that periodically he mailed several hundred post cards to his customers, saying that if the children would present the card at his counter, he would have a present for them. These presents were very inexpensive, but the gifts were looked forward to with much anticipation. Child appeal has built up his business.

We beekeepers know a lot about bees, but we are lacking in knowledge of honey. We should know more about its handling, its storage—for to say that all honey will keep indefinitely in storage is incorrect, and most important of all, we should know the housewife's common objections to honey:

1. Stickiness. Many people do not know the trick of removing extracted honey from a serving dish without getting the fingers, the serving dish and the table cloth sticky. And the particular hostess is not likely to take a chance on embarrassing a guest with such difficulties. It would be a distinct help if a fool-proof honey dish could be invented.

2. Expensive. How often we hear someone say, "Yes, we like honey, but it is so expensive." Whenever a beekeeper hears this expression he should explain that a pound of honey will spread as many slices of bread as a pound of butter, and at half the cost. He should also explain the advantage of purchasing the larger packages.

3. Too intensely sweet. Many folks say, "Honey is good, but it is too filling." There is no reason to doubt that many would eat twice as much honey at each sitting if it was not so intensely sweet. This objection can be met by suggesting that the housewife dilute the honey for one serving with one-fifth water, making a syrup for hot cakes or waffles.

4. Crystalization. Beekeepers expect honey to crystalize, but there are relatively few in the consuming public who understand the reaction. We should always explain the physics of the case by saying that honey, like other super-saturated solutions, tends to become solid after standing for a while. Furthermore, if it is intended that the honey should reach the customer in the liquid form, the honey should be heat-treated before packing. Otherwise, directions for liquefying should be printed on the label.

It is possible that much good would be accomplished by a study of the buying habits of the American housewife. We hear often that small packages are undesirable. Yet, if the city housewife wishes to buy small packages of honey, even though the honey is more expensive in that form, should we refuse to cater to that trade?

One of our advanced students who specialized in beekeeping and poultry raising, spent several months working in various stores of the

leading chain of the country to get the customer's viewpoint on purchases. Really, he was studying customer demand. His comments follow:

"The American housewife seems to be subject to two conflicting emotions upon entering a store to trade, namely, economy versus quality. These two forces work against each other, but usually quality has the better of the argument. Assuming that quality is possible, she then wants something that is:

1. Cheap, for industrial areas the standard of living is such that outlay for food must be curtailed.

2. Sweet. There is much greater demand for sweet things such as jams, preserves, jellies, etc.; for instance, dill pickles sell slowly, while sweet pickles move rapidly.

3. Convenient, easy to open and use. Something that does not require much preparation before using. For instance, although sandwich spreads are expensive and are not pushed in sales way, they find ready sale for lunches and dinner pails.

4. Small. Although small packages represent poor economy they are far the better seller. In industrial centers, families and kitchens are small, and the housewife does not wish to have large packages standing around. In fact, it seems as though she buys just enough for one meal at a time. For instance, in the case of a leading brand of beans, the 9 cent size sold rapidly, while the 15 cent size, which was nearly three times as large, sold slowly. The same was true of mayonnaise and even washing powders."

This student went on to say that it appeared to him as though it would be suicide to push the sale of five pound pails of honey in chain stores. Rather the package should be smaller, preferably glass. Also, a sales "pusher" should be used, the logical one being comb honey. This policy, combined with frequent visits to the store to see that the honey is kept on the counter, should get results, in his opinion.

These conclusions would not apply to agricultural districts. For it was the student's observation that when farmers came to buy, they purchased larger packages and in larger quantities than the city folks.

These suggestions are not offered as conclusive evidence, but obviously there is a weak spot in our present methods of selling honey through groceries, and suggestions for improvement are in order.

Modern sales policy must include the use of advertising in some form. Big business uses the display type of ad in newspapers and magazines, to produce good will, to increase the volume of business and to lower the actual sales cost. But it is not wise to spend large sums of money on advertising unless the distribution and quality of the product are guaranteed. The volume of business done by some of the large manufacturers is so great that their enormous expenditure for advertising represents but from 2 to 6 per cent of the total business done.

If beekeepers were to spend a similar proportion for advertising, it would be necessary to raise nearly half a million dollars yearly for this account. The history of previous attempts to raise money for advertising honey indicates that nothing of the sort is possible at present. In fact, it is doubtful whether $10,000 net could be raised at present

by popular subscription from the beekeeping population of the entire country.

Surely there must be some basic reason for this inertia among beekeepers. We believe that one of the fundamental reasons, and the fact that at present there is not sufficient margin between the car lot price and the retail price. It costs hard cash to sell goods. Ten cent honey in 60 pound cans represents an investment of at least 65 cents per five pound pail. If sold through the regular channels as jams and jellies, this honey would have to retail for at least $1.25 per pail, yet the popular price for the five pound pail seems to be $1.00—and often less.

This absence of a legitimate profit in the jobbing of honey in retail packages discourages those distributors who would carry honey in their line if it paid its way. One wholesale grocer recently remarked to the writer, "We used to stock honey, but the local beekeepers sold the grocers at the same price they quoted us, and maybe sold to retail customers for that same price, too. What is the use of our bothering with something that doesn't pay?"

It is probable that one of the reasons for the present inactivity of the honey market is the fact that many of the bottlers who have heretofore distributed honey locally, have been practically forced out of the game this year by the ridiculously low quotations on water white honey in car lots from the West. These smaller bottlers find it difficult to finance large purchases, and cannot meet quotations of more fortunate competitors. The local market suffers from their inactivity, and the net result to the industry is depressing.

Realizing conditions as they actually are, beekeepers will do well to take a hitch in their belts, and get down to business, and apply sound methods to the marketing of their honey. It would help materially if all honey producers could become familiar with the campaigns put on by the large manufacturers of food products when they bring out a new item, for instance a candy bar, and try to "put it over" as they say. If all the beekeepers could look behind the scenes and see how much work and money is spent not only for advertising—newspaper, poster, window trims, etc., but also in personal solicitation of the trade—wholesalers and retailers, and how much sampling is done, not only at first, but over and over again until the accumulative effect of constant plugging has forced the particular product upon the public's attention. Then, if the product is good, if it is something people will buy again and again, the campaign will have been successful.

If it were possible to organize a company, corporation, syndicate, or cooperative financially capable of handling at least 1,000 carloads of honey a year, the sort of campaign for obtaining distribution, mentioned above, could be applied. And, incidentally, the retail price of honey could be materially improved. A relatively small surplus can throw a market out of balance quickly, as we have seen in regard to honey, and such an agency, through intelligent advertising, could ease an otherwise difficult situation. In this connection, full credit must be given to the Ontario Honey Producers' Cooperative for the splendid work it has accomplished.

Few beekeepers realize the tremendous importance of the decision of the W. K. Kellogg Company to carry good will advertising for honey on their 325,000,000 packages output yearly, in the copy going over the 1,200 newspapers, in recipe booklets, health articles issued from their home economics department, and lastly, in their window trims. The lithographed picture of a jar of honey on the Kellogg Company's grocery window trims will be worth more to beekeeping industry in good will advertising than though the beekeepers themselves were paying the bill! For here is a firm of established reputation for truth in advertising, backed by a worldwide authority on health, recommending honey to the American public. Who can estimate the money value of this gift to the beekeeping fraternity?

The results to be obtained from this advertising, in creating demand for honey, depend upon the beekeepers themselves. Of first importance is honey grading and packing. A large department store manager operating a grocery in connection, said that honey made the poorest appearance of anything he carried in stock. We must dress up our honey packages. If we would really build up a local trade, we should sample the public as much as possible, getting as much publicity for the brand as possible for recompense. Ask the salesmen who have helped "put over" new lines of food products in their territory, articles that may have met with real sales resistance at first, but which later proved to be steady sellers, and they will tell you that sampling the product itself is the best way to get folks acquainted with it.

Even when the product is well known, and has been advertised extensively, sampling is continued by the manufacture. The manufacturers of Jello, Postum, Corn Flakes, and even Oh Henry, sample extensively while carrying a heavy advertising campaign. For today the sales pressure behind leading lines of food products is so strong that it is not enough for a product to be well known; to sell, it must be kept before the eyes of the public every moment.

Our advertising problem is comparatively simple. If we were trying to sell a new product that had never been heard of before, we would need to spend much honey to educate the public to its use. Few persons in the entire country are ignorant of what honey is, and the majority like honey already. Our problem is to get honey into their mouths. We may spend $50 in classified or display ads in the local paper and never come to know whether prospects were reached or not. But if we distribute $50 worth of our best honey at lodge suppers, dinners, luncheons, bazaars, picnics, church benefits, in fact wherever good folks congregate, we are sure that many prospects have been reached who might read a dozen ads without tasting honey.

And after all is said and done, if we had an advertising fund sufficient to buy space in Good Housekeeping, the real benefit would come only through quick follow-up by an active sales organization. We beekeepers may as well realize that in the last analysis it is up to us, personally and individually to sell every pound of honey that we can, at a reasonable and fair price, as near home as possible.

And let's not be downhearted. "Sunkist" brand was first advertised in 1896. Wrigley waited 17 years before he commenced national

advertising, and then he spent $300,000 getting into the market in New York City alone. Although leading firms have spent thousands of dollars advertising honey, the beekeeping fraternity as a whole is just being sold on the idea of advertising HONEY. If beekeepers would "cluster" like bees, for their mutual benefit, the problem would be less difficult. For if ever the industry needed the active coperation of everyone concerned, that time is now.

THE NEW LEAGUE PROGRAM.

(By C. L. Corkins, Secretary, Laramie, Wyoming.)

The American Honey Producers' League seeks to be more truly national than ever before. The new constitution is evidence of this effort. The executive committee, made up of the board of directors, has been increased from five to eleven. For the purpose of electing this board of dirctors, the states have been divided into ten districts, with a director to be elected by ballot by the members residing in each particular district. The eleventh director is to be chosen from the membership at large by the other ten directors. In this way, no one region may have the balance of power, nor can the delegates at a convention elect a director who might not be favored by the membership at large in their states or districts. The machinery for this type of election is set up and the new board of directors which will manage the organization for 1928 will be elected during this summer and will take office at the San Francisco convention.

The power of voting at convention has also been changed so as to be more representative. Every individual member who pays $3.00 has a vote, either in person or by proxy. He does not have to vote through an association. In this way, any individual may avail himself of one vote, which is as powerful as the vote of 25 association members, who vote through their affiliated organization.

But the actual work of the new League is more to the point. Projects upon which there was sectional differences of opinion have been cast aside. We have something more worth while to do in a national organization than to fight among themselves. These matters can and will be quitably settled by the states themselves. There is a greater work for a national organization to do. That work is purely educational in nature, and with thoughtful selection of an educational program, there surely cannot be any great conflict within the membership upon policies. If the beekeepers of America can unite upon such a common ground, our entire industry will be greatly benefited.

The major new projects now under way by the League are as follows.

1. A 20 or more page educational journal to all individual members and to association members at 50 cents per year, extra. There are a million beekeepers in America, and not more than one-tenth of these are now being reached by bee journals. Our new publication, the *American Honey Producer,* will in no way interfere with the journals now in the field, as there is a great undone work of education ahead of all of us. It will be the policy of the Producer to cut League business to the

H. F. WILSON

President of the American Honey Producers' League.

J. A. MUNRO

Election Commissioner, A. H. P. L., Fargo, North Dakota.

minimum, and use the great majority of the space for educational articles. The new things coming out from our research institutions and private investigators, particularly, will be used. For example, one of the great treats ahead of the members will be the publication for the first time of the queen rearing methods of Herman Rauchfuss, Sr., of Englewood, Colorado. Mr. Rauchfuss, who is affectionately known as the Dean of Rocky Mountain beekeeping, has perfected through the years some remarkable short cuts in queen rearing, but there are few outside of his immediate family who know of this. So from the leaders in all parts of the nation will come the good new things which every progressive beekeeper wants to know so that he can cut down his production costs and raise his profits per colony.

2. An eight-page honey pamphlet will be issued quarterly to the medical profession of America. This will be started with a 10,000 edition, but will be increased to reach all of the profession as rapidly as funds are available. It will be sent to one-eighth of the doctors in each state at the beginning. Special contributions are already coming in for this project, and the donors designate to what additional list of doctors, dieticans or hospitals they want their copies of the pamphlet to go, so that they are able to know just where their money is going.

Only the highest class or articles on the use of honey for the public health of the nation will be used in this publication. They will carry real weight with the profession. The ultimate good which will come from this work will be great, for there is no other group which has such widespread effect upon the food habits of the nation. Yet at the same time it is surprising how few doctors really know of the food and health value of honey as compared with other carbohydrate foods. It simply has not been properly brought to their attention.

3. Direct honey publicity is being arranged for, so that the beekeepers may get high class advertising material at cost, and column stories free. We, as beekeepers, for the most part, do not have the time or know how to write advertsing copy or column stories for our private advertising programs. If each of us individually were to hire this done by advertising experts, it would cost us more than the returns would justify. But to do it collectively through the League, the cost will be insignificant.

Not all of the old League projects have been eliminated. Many of them were excellent and of great service to the beekeepers. So the following services may still be had by the membership:

1. Warning Posters. These posters are sold at $1.00 each and are good for two years' time. A $100 reward is paid for the arrest and conviction of anyone molesting a yard where one of these posters is in evidence. Some misunderstanding has arisen regarding this service. Some who have the posters think that the League will prosecute the case. This it obviously cannot do, with the original cost of the posters at such a low figure. Others have had yards molested, found out the guilty parties, settled out of court and then demanded the $100. Naturally the only benefit to the members at large for the paying of this reward would be the publicity given when a case was finally consummated and the penalty paid by the guilty party. So the rewards are

only paid when the actual arrest and conviction of the offender is put through.

2. The Law Books compiled by the Counsel of the League are now available for $1.00 each. It is likely that unbound copies will be available at a greater reduction still.

3. The Honey Booklets are being sold at greatly reduced prices. As long as the present edition lasts they may be had for $5.00 per thousand in thousand lots or more. Smaller quantites sell for 75 cents per hundred. These booklets contain 20 pages of tested recipes which are mighty useful for distribution to your customers and for general advertising work.

4. Continued effort will be given in the defeat of harmful legislation such as the Cole Bill. The League will be the national "watch dog" of the beekeepers. Many things will come only through concerted action, and whenever an emergency exists, a national organization can quickly pay for all its cost to the membership exclusive of the other services it renders.

Only the major projects of the League can be here enumerated and discussed. There will be much other work done. The enlarged purposes of the organization as set forth in the constituton will give some idea of the real scope of our work.

The real message that the officers would like to get across to the beekeepers of America is that we want to make the League what the beekeepers want it to be. We urge criticism. We probably cannot do everything that every beekeeper suggests, but if we get a mass of suggestions, out of them we can better select the program which the majority of the beekeepers want. We would, therefore, purposefully enlist a flood of correspondence from members and non-members alike. If we get such a response, we can all come to a better understanding and the ultimate reaching of our goal—a truly national organization of beekeepers.

FACTS FOR ORCHARDISTS AND BEEKEEPERS.

(By V. G. Milum.)

Numerous facts of interest on this subject can be obtained from *New Jersey Bulletin 434,* New Jersey Experiment Station, New Brunswick, New Jersey.

The flowers of most fruits are usually somewhat sticky, and so the wind is not effective in distributing the pollen. Flowers may be self-sterile or inter-sterile, cross-fertile or cross-sterile. In Illinois it is claimed that two-thirds of the apple varieties are self-sterile, 22 out of 36 varieties of pear are self-sterile, one peach is self-sterile, all sweet cherries and part of the sour cherries, a few varieties of grapes and strawberries are somewhat self-sterile and gooseberry, currant, red and black raspberry and almond and some of the prunes.

In a 20-year-old apple tree there may be 20,000 blossoms. Five to 10 per cent of them are enough for a fruit crop. Bees, however, are the only insects over which man has any control. Midges, surfids, houseflies and bumblebees are about only in small numbers at the time of year when fruit is in bloom, but honeybees may be concentrated in large numbers in hives.

In an experiment with prunes under a tent, 19 per cent of the blossoms were fertilized when bees were present and only 3 per cent without the bees. Wealthy and Jonathan apples, 17 per cent with bees, 4 per cent without; and even self-fertile varieties were increased in set by the presence of bees.

At the McClay orchards, at Hillview, Illinois, in 40 acres of Ganos which had set no fruit since 1925, a splendid lot of apples were harvested in the first year bees were introduced in the orchard. In New Jersey, orchardists have paid as high as $6 per colony to beekeepers to move bees into their orchards during the blooming period.

Bees usually start to fly at about 46 degrees F., although wind and the amount of sunshine makes considerable difference. The growth of the pollen tubes of fruit is also influenced by temperature. Cold weather holds them back. The accessibility of pollen by the female cell is also a factor in the fertilization of fruit. Pollen tubes from one variety of fruit may grow faster than in another variety of the same fruit.

Wind makes considerable difference in the activity of bees in the field. According to Hudson, a 20-mile wind is enough to keep the bees from doing effective work. According to Dr. Parks, a 15-mile wind is sufficient to reduce the work to a small percent. Therefore, it is necessary in orchards that bees be put as close to the trees as possible, so they will not have to fly far to get at the blossoms. According to

Hudson, in New Jersey, one colony should be placed every 110 feet in the orchard, as in their experiment they found no bees among the trees 75 yards from the hives.

Before spraying, the bees should be removed from the orchard. Bees use an average of a quart of water a day per colony and will get it from the spray put on the blossoms of the trees if it is available, taking the poison back to the hive with them.

Considerable interest has been aroused in the possibility of dusting orchards instead of spraying, but no satisfactory dust has yet been found. Dr. Prell, in Germany, dusted poison where bees were working on honeydew and found that the bees gathered the dust like pollen and used it to feed the larvæ and the latter died. If dusting is adopted as a general practice, therefore, it may cause us considerable trouble.

THE DISTRIBUTION OF AMERICAN FOULBROOD.

(By M. G. Dadant.)

There seems to be a great deal of uncertainty as to the degree of prevalence of American foulbrood in the United States and Canada, and the efforts that are being made to combat it on the part of the several states and provinces. Especially is there question in many beekeepers' minds as to whether the efforts that are being made to overcome American foulbrood are meeting with the success they should. In other words, are we coming to a successful solution of the problem of combating American foulbrood, or is the work that is being done in vain?

The writer, in order to get first-hand information on this subject, sent a questionnaire to the officials in charge of foulbrood eradication in the different states and provinces of Canada and the United States, and is presenting in this article the data received therefrom.

Laws of the States.

I was surprised to find that three of the states of the Union still have no laws concerning foulbrood and its eradication. These are Virginia, Arkansas and Delaware.

There are a number of states which lack power in their laws or have not sufficient appropriation to carry on any efficient work. Among these are Oklahoma, Nebraska, Idaho, North Carolina, New Hampshire, Maine, Missouri and West Virginia.

Three states are operating under the old plan of county inspection only. In other words, there is a state law, but bee inspection is done by counties, and the inspectors are appointed by the county commissioners, there being no centralized control. These three states are Oregon, New Mexico and California.

Practically all the balance of the states have more or less effective laws and more or less efficient appropriations for their carrying out.

Of this larger group of states, about three-fourths of the number carry out their work through the State Boards of Agriculture, or Directors of Agriculture, whereas two-fifths of the work is carried on by the State Entomologists, or State Plant Board offices.

In most instances, the most efficiency is gotten from the states operating either under the State Entomologists, or State Plant Boards, because these are less apt to be removed or disturbed through political changes, etc.

However, this is not universal, there being a number of states where the bee inspector is appointed either by the governor, or by the director of agriculture, which are doing very efficient work.

There are a few states in which beekeeping in box hives is prohibited, either entirely, or in such areas as are infected by American foulbrood.

Twenty-five states, at least, require certificates before bees on combs may enter into the state.

Four states require the registering of beekeepers.

At least five states in the United State prohibit the importation of bees on combs, and all of the Canadian provinces do similarly.

In the states where there are foulbrood laws, in practically all instances, penalties are provided for evasion, or for not carrying out the suggestions of the bee inspector.

We have only one state in the Union which provides for penalty for the spraying of fruit trees while in bloom, so that the spray would not be injurious to bees. This is Colorado.

Manitoba, in Canada, has a similar provision.

Funds Available, and Their Expenditure.

The amount of funds available for the combating of American foulbrood in the different states varies from practically nothing to as high as $18,000 per year for this work.

Some of the states ranging in the largest amount for eradication work are as follows: Illinois, $18,000; Michigan, $15,000; Wisconsin, $10,500; Ohio, $10,000; Texas, $10,000; Florida, $10,000; New York, $5,000 to $10,000; Wyoming, $8,000.

In addition there are a number of states operating through State Plant Boards, in the south especially, which have available practically all the funds that are required for efficient inspection.

In most states the amount of funds is provided by statute, but there are a number, like California, where the inspection department is dependent entirely upon a board of supervisors or others set of officials, as to the amount to be expended. In many states, the inspectors become imperative because the laws still provide for the wage of as low as $3.00 for inspectors, so that suitable inspectors cannot be provided.

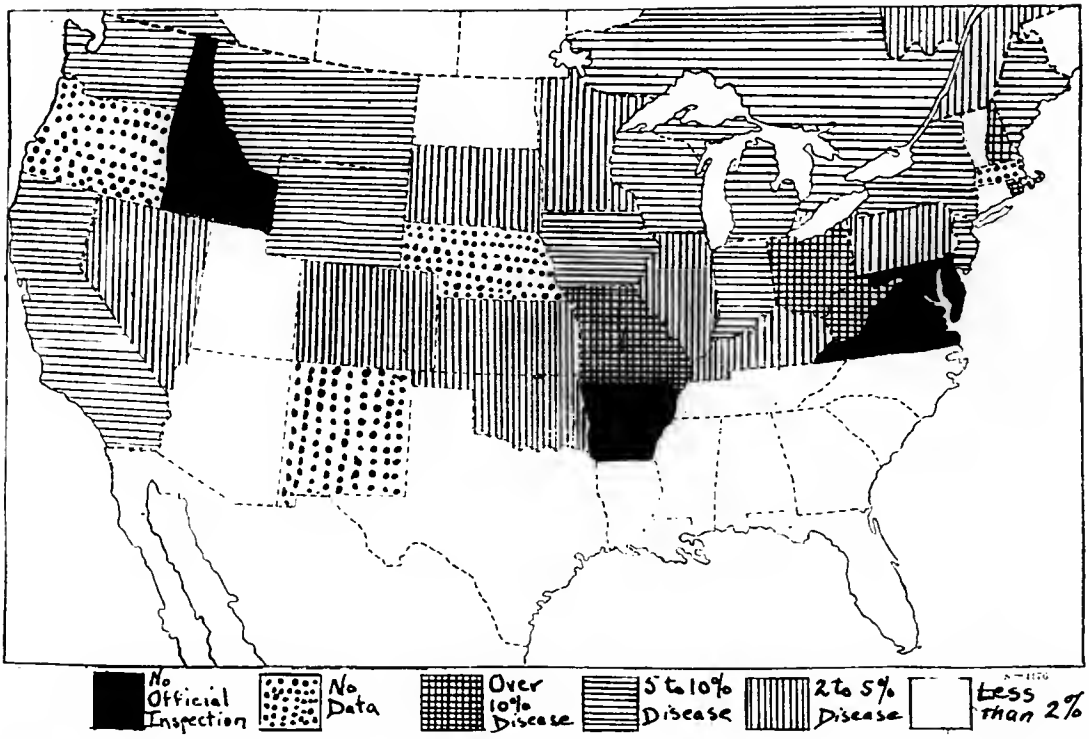
We might state however in passing that a great deal of help is given inspectors by the cooperation of beekeepers in several states who are ready and willing to go out of their way to help the inspectors get efficient inspection. It has, in many instances, been the cause of efficient inspection in states where the funds available would have been greatly insufficient.

Bee Disease Itself.

In 1925 there were inspected in the United States practically 600,000 colonies of bees, of which some 30,000 were diseased. The percentage of infection, therefore, amounted to about 5 per cent.

We present herewith a map showing the amount of infection as given by the inspectors of the several states.

There are, unfortunately, a number of states which do not have data available, or which have no provision for coordinated inspection



Map showing the status of inspection and the reported per cent of disease in the United States.

work, which might be placed in a higher class of this were provided, and complete data available. This is true in the case, especially, of Idaho, which has had inspection for several years, but no official inspection, simply the work of different beekeepers who are doing this work so as to alleviate the disease situation.

A number of states may also appear to have a far greater percentage of disease than they really have. This is especially so in the case of Ohio, which shows large infection. This is largely due to the fact that 1925 was the first year of really efficient inspection work in Ohio, and the inspectors concentrated all of their efforts upon the worst areas in the state. Undoubtedly another year or two will show a great change in Ohio, in amount of infection.

Missouri is probably one of the very worst states in the Union, showing an infection of 17 per cent. Two years ago they did some fairly efficient work there, but the appropriation was, a year later, cut off, and the results can be very readily seen. Not only that, but the work of the past two years will be entirely lost, unless the Missouri beekeepers can get together and get a real inspection appropriation.

Eradication work is not carried on in specific way common to the several states. The states, however, which are accomplishing the most are probably doing so by the area cleanup method, that is, answering calls where inspection is requested in the entire state, but concentrating their efforts to a complete area cleanup as they go along.

A second method of inspection which has worked very well is for the county association to recommend inspectors in their several districts and the county inspectors to be examined and deputized by the Chief, and operate under him. This method is working very well in Illinois and other states.

As stated before, there are three states in which the county plan is relied upon. This has not proven satisfactory, simply from the reason that there is no supervision over the county inspectors.

As a result, some counties where there are efficient inspectors are getting desirable work, but there are neighboring counties which are still bad with disease, and from which the disease spreads rapidly to the neighboring counties. California has had a good deal of this situation to meet, and it is just now considering a revision over the entire state.

We believe that on examining the map the reader will find that the results of foulbrood inspection have been very gratifying. The gratifying results are especially noticed in the southern queen and bee shipping states, practically all of which are now in the class showing less than 2 per cent disease.

The second lot of states which show gratifying results is the big honey producing states of the west. With the exception of California and possibly Oregon and New Mexico, all under the county inspection system, we do not believe the time is far distant when all of these states will also rank in those showing less than 2 per cent infection. This is especially so in the case of Nevada, Wyoming and Montana, which are taking a real interest in the work and rapidly cleaning up.

Colorado has also reduced the amount of infection materially in the last three years.

As a mater of fact, we are now in a position where the central west and eastern states will have to look to some other excuse besides the importation of diseased honey and diseased bees as a reason for foulbrood dissemination.

There was a time when this excuse could very readily be given, but the time seems now to be past.

It behooves the central western and eastern states to make an efficient campaign toward eradication, or there will be a "kick back" on the part of the south and west in an effort to get disease eradication in these areas.

Successful Solution of the Problem.

After careful study of reports coming in from inspectors in these widely separated areas, it appears to the writer that at the present rate of progress it will not be very many years until the percentage of disease is reduced in the United States and Canada to an amount of, say, 2 to 3 per cent.

When it comes to getting below that amount, however, the cost of inspection appears to rise in proportion to the number of colonies inspected and there is question whether complete eradication can ever take place under present methods.

With this end in view, the writer asked specifically of the inspectors as to what method of successful foulbrood eradication could be best used.

The answers were far from alike. In fact they varied widely, as you can see by the following: Federal aid was urged by three; cooperation of states by six; strict quarantine by five; area cleanup by five; continued inspection by one; certified honey by three; commercial necessity by one; registration by two; compelling removable frame hives by one; education by two; burning up by two; better laws by three; research by one; adequate funds by two.

From this it can be seen that there is a very wide variance in ideas as to just what will make for a complete eradication of American foulbrood.

There is one thing, however, that is self-evident and runs through the answers as submitted by the different inspectors, and this is that undoubtedly there will never be complete eradication if there is a lack of interest on the part of the beekeeper. In other words, it appears that when the amount of disease begins to lessen in the state, the interest on the part of the beekeeper also begins to slacken, and the general result is that the general appropriations are cut off, or cut, and foulbrood again begins to increase.

Idaho is an example of one of the states in which the beekeepers have not shown sufficient interest to get an efficient appropriation. Undoubtedly, with the cooperative effort of all the beekeepers in that state, it would not be difficult to get the inspection needed, because Idaho is a big honey producing and honey shipping state and its legislators should most certainly be glad to cooperate with any real needed work if it were shown them in the righ light.

Summary.

Although it may be presuming on the part of the writer to offer any personal suggestions in connection with the article, rather than let the reader draw his own conclusion, there are some points which we believe should be made and which may be of interest.

In the first place it would appear, with the extremely small amount of infection in the southern states, that the recent laws for the prohibition of importation of bees on combs are justified. We must not lose track of the fact, however, that the southern states are not the only states from which importations are made, and that more than likely the restrictions are aimed at the prohibition of the shipment into the several states of the bees of homesteaders and others, as well as shipments of nuclei, etc., from some of the states a little further north, which are not as well cleaned up of disease as the southern states.

We might argue that a certificate from the chief inspector of the state from which shipment is made should be sufficient.

However, anyone who is cognizant with American foulbrood will readily understand that it will not be difficult to hide a small amount of disease in an apiary from the inspector, in order to get a certificate of inspection when moving an entire apiary to a new location or to another state.

Such states as North Dakota, Montana, and others which are becoming increasingly populous in bee colonies, have to watch this point if they wish to avoid new sources of infection as homesteaders come in.

While the laws of several states might be made very much more severe than at present, we question whether this is going to make any great difference in the prevalence of disease. It is true, however, that the amount of money available for inspection purposes makes a large difference, and if education is combined with inspection work, the results are at once seen.

For instance, the work of the State of Iowa has been done practically entirely through education, there being only available a fund of $1,500 for inspection work for this entire state, which has a large number of commercial beekeepers as well as many smaller ones. Undoubtedly education has gotten in its work there.

In conclusion, we might state that one of the drawbacks which is going to hinder the entire cleanup of foulbrood in this country is the natural apathy on the part of the individual beekeepers, who are very slow to cooperate with each other, not only along disease eradication lines, but also along marketing and other lines as well. This is bound to slow up the inspection work because the necessary support is not given for the work before the legislators of the state.

A second point, which would undoubtedly help greatly with the furthering of adequate inspection work, is cooperation between inspectors.

If every inspector was notified of shipments coming into his state from other states, even though these were certified, he would then be in a much better condition to do adequate inspection himself. Not only this, but frequent meeting of these inspectors together, or correspondence, would undoubtedly reveal points which should be of great benefit.

Perhaps one of our reporters was not far out of the way when he insisted that research is what we need in disease eradication, and it might be that we are going the long way around in accomplishing the results desired. Perhaps. But in the meantime we must carry on.

The especially redeeming features of the eradication program are the rapid progress on the part of the southern states, and of the western states as well.

Whether it will take some drastic action such as laws requiring the certification of honey on the part of the several states, or on the part of the Federal government, remains to be seen. We are inclined to believe that the progress in disease eradication is going to be very slow, indeed, after the percentage drops as low as 3 per cent in the several states, unless we reform, cooperate and all go forward together. Already some southern and western states have excluded the shipment of bees on combs from outside.

Nobody wants honey certification, but suppose in over-anxiety, in retaliation, or through misdirected legislation only two states, Illinois and New York, should demand it, would we be ready? What would you do, Mr. Idaho beekeeper, or California, or New Mexico, or Iowa, or Michigan? Isn't it high time we really made a concerted effort, not to combat certification, but to make it unnecessary?

Aren't you willing to admit that our present agitation is because of our past apathy?

PACKAGE BEES IN CANADA.

(By L. T. Floyd.)

Since beginning my work in Manitoba, I have probably seen most every shipment of package bees from the state into the province. The need of a health certificate is very apparent with the statement that the sugar syrup used is free from disease.

It is becoming the habit of large honey producers in the north to order packages each year, whether they need them or not, to replace their probable losses. Many of the cases of American foulbrood have been traced to shipments on combs and for that reason Canada has stopped the importation of bees in this way, since it is a tremendously large territory and one man cannot handle it all. The safest course is to stop the shipments of bees on combs.

No packages should be shipped on candy. I know of only one southern shipper who sends bees this way without heavy losses. So we have to demand the sugar syrup.

We have a wondeful express agent at Winnipeg who has learned how to handle bees well. As shipments come in he feeds the bees sugar syrup before reshipping through the province. We have found that the best feeder has only two tiny holes about the size of the point of a pin, not large enough for the shank of the pin to go through. About two pounds of syrup is sufficient for a three pound package of bees for a six day shipment. The covers must be on tight, as they may come loose in shipping.

We don't want packages which have the queen fastened on top of the package outside. She should be in a cage so she can be fastened in the center of the cluster, preferably with no attendants and in a dry cage. The best package, of course, is one with the queen already introduced with the bees.

Bees should reach Canada in late April or early May, not later than May 10th. We don't want replacements or our money but we want the bees just as we order them. Some of our beekeepers buy and sell bees. They buy packages and sell nuclei.

We have found it best to hive the bees at night. Packages with the queens released in the cages on the way are not so good, as the queens are often balled. In hiving, we work the packages back and forth in the row, at the ends, instead of straight down the row to give time for the bees to settle down. Bees, after being hived, build up much faster on honey than on syrup.

It is necessary to be absolutely sure of the shipper before ordering and if one cannot be certain it is better to order smaller lots from several men to be sure to get some bees. We do not worry about the bees coming during a cool spell, as they do not suffer from the cold but rather from the heat.

HONEY GRADING IN WISCONSIN.

(By C. D. Adams, Wisconsin Department of Markets.)

After seven years of honey grading in Wisconsin, it might be of interest to sum up the results. In fact we are often compelled to make this review in these days of slow honey sales to convince ourselves that we are making progress. When we get to talking of the good old days we have to admit that our entire system of honey marketing, as well as honey production, has changed.

Like most other beekeepers I had been going along in the well beaten track of producing and marketing honey and did not realize how unsatisfactory it was until a few months after the honey grading law had become effective, thanks to a few wide awake members of our State Beekeepers' Association.

Along in the fall the State Department of Markets asked me to visit the pricipal honey markets of the state to see how well the law was being complied with. The trip was an eye opener to me. I found almost every grocery store well stocked with bottled honey, practically all of which had been bottled, not by beekeepers but by bottlers in the larger cities both inside and outside our state. As most of this had been bottled before the law had gone into effect, naturally it did not comply with the rules. But it developed that practically all that bore a Wisconsin label had been bought with the understanding that it was Wisconsin honey. But I happened to know it was only a blend of Wisconsin honey with western honey. I later discovered that a few of our own beekeepers were selling a similar mixture for very good business reasons. To the best of my memory only one large Wisconsin beekeeper was putting on the market at that time pound jars of honey with an individual label. Several were using stock labels for larger containers. But most of the local honey had been brought to the stores in any container that happened to be at hand. Very few of these were at all attractive. In fact some appeared to be far from sanitary.

Most of these beekeepers had made an attempt to comply with the law by using the rubber stamps supplied by the Market Department. Some had bought stock labels and stamped them. Others had taken any scrap of paper that was handy and stamped that and stuck it on the container. That was not so bad but an examination of the contents revealed one reason for the grading law which, boiled down, says that all Wisconsin honey must be graded or marked "ungraded." Honey produced outside the state must indicate in some way on the label that it is not Wisconsin honey. Honey that is a blend of Wisconsin honey with that of another state must be labeled, "Produced in Wisconsin and other states."

C. D. ADAMS

In charge of honey grading, Wisconsin Department of Markets.

In extracted honey we have but one grade—Wisconsin No. 1. Honey that does not come up to the requirements of No. 1 must be marked "ungraded." But the requirements of No. 1 are so simple that it would appear easy to grade. The only requirements are that the honey be well ripened, weighing 12 pounds to the gallon, and well strained. To my surprise a large percentage of the honey did not come up to these very reasonable requirements. Very little of it was well strained and in almost every village and city I found fermented honey. I made it my business to talk with the grocer if possible and get his reaction toward honey and beekeepers. I found he had good reasons for keeping most of the local honey under the counter or in the back room. He knew that the attractiveness of the package had a great deal to do with the sale of goods. Incidentally I learned that most beekeepers used very unbusinesslike methods in their dealings with the grocer. This has since been corrected to a great extent through the efforts of the local and state associations.

But of more importance than gaining the viewpoint and good will of the grocer was our visits to the beekeeper, when practical to do so. If this could not be done we attempted to at least talk to him over the telephone and he was invited to meet one of us at the next local beekeepers' meeting to talk it over. As a last resort he was written a letter explaining where he had fallen down and advised to be more careful in the future. With a very large majority this resulted in whole-hearted cooperation of both the dealer and beekeeper. A few were either indifferent or stubborn and more drastic methods were and still are resorted to. As the law provides for either a fine or jail sentence or both for violation of the law by either the dealer or producer, we have no chronic violators.

The first inspection trip indicated that of even more importance than the producer in putting over the ideas of the beekeepers, back of this law was the large dealers and bottlers. So my initial trip was cut short that I might visit these men. Some of them I had known for years and they were quite frank with me. Very unfortunately they had not been consulted before the law was passed and they were naturally antagonistic. More than one of them told me in a friendly and business way that rather than comply with the law they would combine and fight it out in the courts. But the more they talked it over among themselves and their attorneys the more reasonable they became. Within a month all had agreed to cooperate with us and most of them became at least partially converted to the idea within a year, and not one of them would now want to go back to the unregulated ways.

Let us briefly go over the conditions as I found them in 1919. None of the bottlers were putting up straight Wisconsin honey. When I asked why, they invited me into their warehouses and showed me Wisconsin honey as it came to them and then proudly exhibited their western honey. The Wisconsin honey was often in old rusty cans. It was not clean and much of it was unripe. If it had been bought by sample, only a part of it was like the sample.

In contrast to this was the almost absolute uniformity of the western product and it was clean and ripe. And in addition to this it cost less

than the home product. In surprise I turned to one of them and asked why he had used any Wisconsin honey at all. He replied that he had for awhile put up only western honey but the consumers complained that it did not taste like honey and the grocers had suspected adulteration. He found that Wisconsin people preferred clover or clover and basswood honey. Both of these have pronounced flavors when compared to the alfalfa and sweet clover honey.

This confirmed the definition we sometimes give of "good honey." "Good honey is the honey you ate in childhood." I find very few exceptions to this rule. The bottler told me that he and all the other bottlers had been forced to use just enough Wisconsin honey to flavor the, to them, more desirable honey from the west. They had found that one part of Wisconsin honey to four parts western honey had given the best results, all things considered.

Thus our beekeepers were furnishing one pound of Wisconsin honey to sell four pounds of other honey. And then this honey was sold all over the state in large quantities because it was put up in an attractive package and sold to the grocer according to business practices.

I attempted to point out to the bottlers that the grading rules were intended to improve the very conditions of which they complained. In this they had little faith but they said, "If it does improve our honey that will increase the price, which is already too high." But in spite of their objections they complied with the rules by putting on each label, "Produced in Wisconsin and other states."

Some of them soon discovered that our department could be more useful to them and so when they received some honey that was not as represented we were appealed to. If the honey was not ripe the beekeeper was glad to pay the freight back to his depot to keep from being prosecuted. In case the honey was of fair quality but not as represented, the matter was easily adjusted.

Competition forced each bottler to use more and more of the home grown honey and before long one of the largest bottlers tried the experiment of putting out straight Wisconsin honey at an advanced price. This converted him and from that time on nothing but pure Wisconsin honey has gone out under his trademark. To meet competition he puts out and inferior product under another label. Others soon were forced to use the straight home product also and when I reminded them of the uncomplimentary things they had said about our honey they gladly admitted that they no longer have any complaint to make about our honey. It comes true to grade and sample. In fact it is so satisfactory that instead of 40 or 50 carloads being brought into the state yearly, now only one or two carlots come from the outside, and consequently much less of our honey is shipped out.

But the big difference is in the honey found in the grocery stores in all parts of the state. Nearly all is of local production. Most stores have a few 8 and 16 ounce jars bottled in Milwaukee, while occasionally a few bottles from outside the state are found. We claim this is almost an ideal condition. The consumer does not pay for long freight hauls and commissions to several middlemen. The producer does have to spend considerably more for containers and labels but he considers it

good advertising. They use thousands of artistic labels, either those of the State Association, stock labels or individual labels. Instead of using the emergency rubber stamps, furnished by the state, the grading requirements are usually printed on the label.

In addition to the grade of the honey it is necessary to put on the color. For some time this was difficult for the beekeeper to determine but now, thanks to the educational work of both the state and local associations, the color is easily determined.

Just a few words will dispose of the question of comb honey, which is of minor importance compared with extracted honey. For some reason not yet clear to many of us the beekeepers were very careless in the production and marketing of their comb honey. A few outstanding ones were producing first class honey in large quantities and marketing most of it outside the state. This left the poor honey for home consumption. In most cases the quality of the honey was good but the appearance of it spoiled the sale of it.

Here again the western beekeeper took advantage of the situation and sent several carloads yearly to Milwaukee to be distributed over the state. And again it became "Wisconsin honey" as soon as it arrived at Milwaukee.

The grading law insisted that every section and case had to be stamped. The commission men and wholesalers found the opening and stamping of double tier cases of honey an expensive job and then it was found the trade did not want honey "produced outside Wisconsin." To the best of my knowledge the last carload of comb honey came to Milwaukee in 1922 and after a year in a warehouse most of it was shipped to Chicago to be sold. Small lots are still shipped from Chicago to the cities in the southern part of the state and in most cases marketed in compliance with the law.

Many comb honey producers are now producing and marketing near home just as fine looking honey as any produced in the west, while others have gone on in the old slip-shod way of producing indifferent honey, but even they have been forced by competition to improve their marketing methods. Practically all of these stamp their honey "ungraded." Even much of the really nice honey is so marked. In fact this is the one unsatisfactory feature of the way the rules have worked out with both comb and extracted honey. So dissatisfied have many of the better class of beekeepers become that many of the local associations passed resolutions favoring doing away with the word "ungraded" and substituting the words "cull honey." The Department of Markets, after consulting the assistant attorney general advised against this, but no doubt a somewhat less drastic method will soon be adopted to check this evasion of the intent of the law.

When we are asked if the law has worked out satisfactorily our best answer is that never at a State Association meeting has there been even a suggestion by a member that the law be altered in any way except to make it more stringent, and to the best of my knowledge the same can be said of the meetings of the local associations, and I have been present at most of these meetings each year.

Letters to our office indicate that leaders in several other states are considering doing something along this line. To those who ask for information we reply that unless some State Department is held responsible for the enforcement and is willing to devote considerable time to the proposition, a grading law is not apt to prove satisfactory. Wisconsin is thoroughly sold on the whole proposition of grading farm prducts and is gradually increasing the number of products that may be graded. In most of these cases the grading is optional, but in case the producer chooses to grade an article, he is held responsible if the article does not come up to the standard.

Before this is published we shall probably have U. S. Honey Grades. The use of these grades is optional and probably will not have much effect on the local marketing of honey unless the various states adopt them and make their use compulsory. If this is done, we shall have uniform grading all over the country, which is very desirable.

THE MOUNTAIN STATES HONEY PRODUCERS' ASSOCIATION.

(By C. L. Corkins.)

The formation of the Mountain States Honey Producers' Association should be hailed by beekeepers all over America as a God-send. It means the cessation of the dumping of a good many trainloads of honey upon the eastern markets at prices which speculators are willing to pay. It means that intermountain beekeepers will no longer be in direct competition one with the other in the sales of carlots of honey. The vast majority of the 800 carlot production of this region will henceforth be sent to market in an orderly fashion.

It is not the purpose of this organization to hold buyers up to high prices which the market will not justify, but it will mean equal prices to all, backed with government grades and an unfailing supply. This will insure the market of greater stability at prices fair to all and the elimination of the gambling factor by the buyer seller alike. Such a condition should greatly stabilize the business of the legitimate distributors of honey and make them more eager to handle our product.

Canadian producers have said that the dumping of the honey of this territory onto the market costs them 2 cents per pound on their honey in the export trade. If this is true, how much more has this honey cost the producers of the eastern and middle western states upon our domestic market?

With the real season of our operations yet five months away, results of organization are already in evidence. A firm grip has already been taken upon the small amount of carry-over. As a consequence, within one month after our organization, offers and sales were made in Wyoming at a price from ½ to 1 cent above the previous quotations. Also, the demand quickened. One western dealer sold 25 carloads during a period when the normal expectancy was not over five.

The Mountain States Honey Producers' Association is a non-profit cooperative marketing association incorporated under the laws of Idaho. Every provision has been made for the raising of working funds which will give the association adequate financial stability. The states of Montana, Idaho, Utah, Colorado and Wyoming are working together as a unit. The spirt of cooperation already manifested bids fair for great success.

Not the least thing in favor of this organization is the fact that it was brought into being by the producers themselves, not by any high-powered organizer. The organizations of these states have been working and thinking towards this end for the past several years, and simply took this as the proper moment to get together. During our period of preparation and at the final organization we used the best

expert advice available from government and state agencies, as well as from private, successful honey marketing organizations. From beginning to end the producers have been the leaders and expert assistance was called in when and where needed.

At the present moment, Mr. A. W. B. Kjosness, formerly Commissioner of Agriculture of Idaho, is the General Manager. Mr. Kjosness is yet working in a similar capacity with a chain of creameries in Idaho. Because of his many and successful years of experience in cooperative marketing, the beekeepers are in hopes that he may be weaned away from butter and cheese and so as to give his full services permanently to honey.

The producers do not anticipate that this marketing organization will revolutionize the marketing of our honey over night or bring us fabulous wealth. If it does nothing more than to eliminate the speculative buyers and the unstability of prices, they will rest content at the end of the first year. If this can be done, they will feel assured that slightly better prices will come year by year, until commercial beekeeping will will no longer be a gamble, but rather a firm, sound and successful business.

REPORTS OF THE VICE-PRESIDENTS.

Beekeeping in Champaign County—A Report for 1926.

(W. H. Force, Vice-President, Champaign.)

Years ago there was an active organization of beekeepers in Champaign County. There were then in the county apiaries of a hundred or more colonies of honeybees. But few of the beekeepers of those days are now with us. Their bees have disappeared and a growing lack of interest resulted in the complete disorganization of apicultural activities. Disease has taken its heavy toll so that now for many years beekeeping has been generally unprofitable.

Occasional attempts have been made to rejuvenate the old beekeepers' organization, but interest was lacking. Disease continued to take its toll unchecked until 1924, when an effort was made to clean up some of the disease about the University of Illinois. Inasmuch as work had commenced there on bee culture problems, the constant appearance of disease from the surrounding neighborhood was seriously annoying and hampering this work. In 1925 a State inspector was finally induced to spend a few days in the county in the beginning of a cleanup campaign. The prevalence of bee diseases and the growing interest of a few new and younger beekeepers resulted in the formation of a new Champaign County Beekeepers' Association.

The new organization was effected February 18, 1926, with W. H. Force, President; M. E. Smith, Vice-President, and George Rasmussen, Secretary and Treasurer. During the year a total of three meetings and three field demonstrations aroused considerable local interest. This organization is affiliated with the Illinois State Beekeepers' Association. One of its first aims was to eradicate bee diseases from the county and to encourage the replacing of the black and mixed bees by good Italian stock.

Accordingly, W. H. Force was nominated to become an Apiary Inspector for the county. Owing to some delay in his appointment by the State Department of Agriculture, inspection work was not begun until later than it should have been. However, at the end of the season considerable had been accomplished. In and adjoining the county there were found 382 beekeepers, owning 2,013 colonies of living bees. In addition to these 162 colonies were found dead from various causes. Of the living colonies, 435 were housed in boxes, nail kegs, gums, churns, etc.; 187 in hives had cross-built combs; 235 were affiicted with American foulbrood, and 38 with European foulbrood. Of those diseased 44 were burned, some were treated, and those found either diseased or on immovable combs too late in the season to treat, were ordered (when

populous enough to winter over) to be transferred next spring. Another advance was made in the replacing of nearly 100 inferior queens by good Italian stock.

The late summer of 1925 was so dry that most of the white clover in the county was killed before the late rains commenced in September. Consequently this source of nectar was almost lacking this past year. The cool, backward spring of 1926 was generally unfavorable for bee culture, especially during late May and most of June. Only the strong, well cared for and populous colonies showed a surplus during fruit-bloom. Some of these stored up a surplus of 20 to 30 pounds of honey at that time and were therefore adequately provided with stores at all times before the sweet clover began blossoming during the last week in June. Throughout the remainder of the season until after mid-September there was something of a nectar yield, but since about August 1 so many days were rainy that many of the colonies gathered little if any surplus. Practically no work was done in section supers after July.

It is doubtful if over a dozen beekeepers in the county actually obtained any profit from their bees in 1926. Many obtained practically no surplus, while the great majority averaged a very short crop. Only the very best trained beekeepers were able to obtain a reasonable yield. In one case there was an average of 100 marktable sections per colony. In only two cases has a yield above 100 pounds of extracted honey per colony been reported. These highest yields were in each instance secured from apiaries which were given ample winter protection and an abundance of stores and room. During the summer they were most carefully supered and none ever prepared to swarm. In general the bees have gone into winter in much better condition as to both stores and bees than they did a year ago. Adequate winter protection, unfortunately, is the exception rather than the rule in this county.

The very wet weather since August 1 has resulted in both the white and sweet clovers, as well as other nectar-bearing plants, getting well established and greatly increasing in numbers, so that at this time prospects are good for bee forage in 1927.

The honey market has been rather dull. In the past, one or two honey producers from an adjoining county have offered their honey on the local market at ruinously low prices. A careful canvass of the situation and some systematic marketing has conclusively shown that but little, if any, more honey is sold at very low prices than when a reasonable price is asked. In fact it appears that buyers become suspicious of honey priced too low and they refuse to purchase it. The only way in which we can hope to improve our local honey demand is by supplying an attractively packed quality product and keeping it on the market at all times.

It was a great surprise to learn this year that the city of Danville (Vermilion County), near us has an ordinance prohibiting the keeping of bees in the city limits. This was passed (Ordinance No. 770) and approved July 29, 1918. The penalty for its violation is a fine of $3 to $25 for each offense. Since such ordinances in the past have

been declared illegal, it seems unfortunate that such a statute has been retained so long in an Illinois city.

After a year spent in inspection work in and about Champaign County, one is impressed most forcibly by the evidence that the apiculture of the county is not what it should be. The brood diseases have made serious inroads in the old "beekeeping," and our apiaries are not yielding a revenue to their owners. Nearly all of the bees are either black or mixed races and of inferior quality. The majority of the beekeepers are unacquainted with the best modern methods of apiary management. Many also are indifferent, but others seem eager to learn better methods. Only a mere beginning has been made toward the establishment of well managed modern apiaries. The success of this beginning is so marked that it inspires confidence in the beekeeping future of Champaign County. One thing is certain, however; there is no possibility for the development of this industry except by well trained people who are both willing and able to manage their apiaries with the utmost efficiency.

Chicago District.

(A. G. Gill, Vice-President.)

What shall I, as a Vice-President of our Association, say of the past year?

As far as I know, no particular piece of work presented itself for my attention during the year. There is practically no activity on which I may report as Vice-President.

I may give a word on the beekeeping of this part of the State for the year. A large winter and spring loss reduced most apiaries in number of colonies. The colonies remaining were weak. Much bad weather interfered with building up from the bees' and beekeepers' standpoint. A late spring aided somewhat, so that some colonies were in prime condition late in June and ready for our principal honey flow the first half of July. These colonies got the crop in the Chicago district this year.

The crop was light. Prices should have ruled strong. Competition of shipped honey and carry-over stock held the Chicago market down on comb honey until November and on extracted honey all fall. Comb honey will rule strong for the rest of the year. Improvement in the extracted market is desired, but not anticipated at this writing. Cutting in prices, which we have every year, went to greater extremes this year and did correspondingly more damage.

It is for the inspection service to report on disease conditions. We hope a decided improvement has been made during 1926. It is evident that persistent work must be done for several years to eradicate disease to the point of general safety.

This part of the State wants the inspection service to proceed full-steam ahead. We want firstly that an appropriation fully equal to the former one be secured for the next biennium. We want, secondly, that

the inspection service be such that the money secured will be so used as to accomplish the very most possible toward rapid eradication of disease. This part of the State wants action on the port of the State Acssociation, inspection service, and extension service. It wants this for itself, but also for all parts of the State. We up here will support any fair move to benefit beekeeping throughout the State.

Let us have beekeeping on a high plane in Illinois. Let us all ask for large things, expect large things, and work for large things.

Southern Illinois District.

(W. H. Galeener, Vienna, Vice-President.)

The past season for the beekeeper in southern Illinois has been one of widely different experiences. In some localities results were good, while in others the reports were not so favorable. One cause for this may be on account of the spotted drouth areas which prevailed throughout the season. However, the beekeepers were not discouraged and the season's accomplishments are worthy of recording.

Some of our local organizations held enthusiastic meetings. These meetings have proven to be the most effective way of bringing before the beekeeper the best approved methods. From a live organization we can more easily detect the progress of a community and check up on the application of extension methods.

Some of our associations were not active this season. This was due in a large measure to the very poor season of 1925. Many beekeepers became discouraged. Our State program did not provide for sufficient follow up work for all of the newly organized communities, so some of them followed the line of least resistance.

Beekeeping is mostly a sideline activity for us and we are confronted with the problem of holding interest in the various units. Credit must be given the State Association for much of the constructive work done for the beekeeper in the past. The meetings sponsored by the State Association have helped the beekeeper to realize that he had problems to solve.

It is through the State inspection work, also, that renewed interest has been taken in beekeeping. The necessity of the modern hive has has been emphasized. Since the campaign of disease eradication has begun some localities have reported a substantial decrease of foulbrood.

The good work of inspection should go on, for this is the most effective method of disease eradication, unless it be drastic legislation. Some have suggested that we have a law requiring every beekeeper to equip his hives with movable frames.

Through the University extension work much valuable help has been gained by our beekeepers. The schools of instruction and cooperation with the Farm Bureaus have done much to improve methods.

The importance of feeding for winter has been demonstrated. A few of our bee men feed, but as we usually have a good honey flow in August and September, the normal colony will have plenty of stores. It is not of the best quality to winter on, but somehow they manage to

come through on it. In communities where sweet clover is plentiful a better quality of honey for wintering is secured.

Very little winter packing is practiced, although this is recommended at our extension schools. The few who have packed their bees for winter feel that they have been well repaid.

We still have the box hive with us, but the constructive movement to replace it continues. In every community we may see many changes.

Mr. Wayne Lingenfelter, of Ullen, reports that the honey flow has been poor there, but good around Cairo. He also states that "the farmers are beginning to sow sweet clover, so the prospect looks better for the future." He does not know of a single case of foulbrood there at present. He further states, "several beekeepers are changing to modern hives and requeening is practiced among all of the better beekeepers."

In Johnson and Williamson counties the honey flow was good in the fall, but from very poor to none in the spring, only where there was sweet clover. Bees are in good shape for winter. Very little feeding or winter packing is practiced. One bee meeting was held at Marion and was well attended. Mr. Otis Kelley, the inspector there, reports the greater part of the county free from foulbrood. The principal disease area is around Herrin. (From all reports they have a new kind of foulbrood there, not related to apiculture, however.) In Franklin and Perry counties the honey flow has been fairly good. Mr. Roy Annear, of Mulkeytown, says the foulbrood situation there is looking better. In 1925 Perry County had 10 per cent infection, while this year it was reduced to about 2 per cent. A few beekeepers feed for winter. Quite a few have transferred their bees into modern hives. Only a few practice requeening.

Saline and Gallatin counties have a united association. It is a good live one, according to Mr. Everett Weaver, of Emden, who owns a fine apiary at Eldorado. Four meeting were held this year. An all-day picnic was held last year and would have had another this year, but were rained out. Mr. Milum attended one of the meetings at which there were 49 in attendance. Mr. Cale was present at another meeting. The honey flow was light in the spring, but the rains came in August and there was a fine fall flow. Mr. Weaver says: "I have tried for two years with the help of several others to get the people to transfer out of old boxes and a great many are doing so. We have a queen breeder at Eldorado and he is sure doing a lot of good." Mr. Weaver got an average of 108 pounds of honey per colony this year. About half of this was extracted and the other half sold at chunk honey at 25 cents per pound.

Mrs. Minnie Daniel, of Golconda, reports that the Pope County Association did not hold any meetings this year, as many of the beekeepers lost their bees last winter from starvation, due to the poor honey flow of 1925. A few beekeepers fed last winter and they were well repaid this year on account of the very heavy honey flow both spring and fall. The bees are going into winter with plenty of stores. Only a few people pack their bees. Bee disease is scarce. Not so many box hives, the modern hives are replacing them. No requeening done

this year, but 1927 will find a lot of requeening among the beekeepers of Pope County. From one colony which came through the winter weak, Mr. L. Kimmel, County Adviser, produced 150 pounds of extracted honey. Mrs. Daniel, in speaking of her bees, said they did well this season. She lost all but one colony in moving them last winter. From this one she made seven more which became strong colonies and produced a surplus of 200 pounds of extracted honey, and have plenty of stores for winter.

As to the interest of some of our younger beekeepers, I am glad to report on the activities of the Bambridge Bee Club, located in Williamson County. This club, directed by the Farm Bureau, is in its third year of accomplishment. The work of the year consists of meetings where demonstrations in transferring are held, requeening, inspecting for disease, making packing cases. Indoor meetings where moving pictures and slides on beekeeping are shown, club tours and fair exhibits. There are lots of interesting things for young beekeepers. This sort of club work should be encouraged in other counties.

This report does not cover all the counties in southern Illinois, but the few which are mentioned may suffice to give you the present status of beekeeping in our part of the State.

COUNTY ASSOCIATION ACTIVITIES FOR 1926.

Kane County Association.

(Edwin M. Stanton, Jr., Secretary.)

Our Association held four regular meetings at Geneva court house throughout the year. One field meeting was held at the apiary of Ross Morrill, very well attended, but cut short by rain. Some of our officers have assisted adjoining counties in organization and inspection work.

We were favored by a short meeting on the Illinois Bee Tour at Ross Morrill's also. We hope this will be part of the 1927 program. Our Association has brought us in closer touch with each other, has helped us fight disease and has made a better local market for our honey.

Franklin County.

(E. E. Glick, Benton, Secretary.)

On account of the bad season the past year in this county, very little work was accomplished. We held one meeting on the caring for bees. We started one demonstration yard, but owing to the fact that there was very little flow in that community, we did not hold any meetings the past year. Two men were started in the business with a total of 32 colonies.

All colonies in the county were inspected by the Bee Inspector. We are now finding very few diseased colonies.

Will County.

(A. J. Polcyn, Joliet, Secretary and Treasurer.)

It has only been a short time since the beekeepers of Will County first organized and we have been doing very well. Last year we had four deputy inspectors to do as much cleaning up as could be done, as we needed it very badly. Not one of the four could give all his time, and the appointment of four insured that the work would be done.

We had meetings that were interesting and fairly well attended. The officers are: Edward Winkler, President, Joliet; Valentine Heussner, Vice-President, Lemont; A. J. Polcyn, Secretary-Treasurer, Joliet. We will have a meeting in the next few weeks and so there may be more news.

Grundy County.

(Ernest H. Davy, Morris, Secretary.)

We have been greatly handicapped by mud roads during the fall and winter and I cannot report any particular activity except the annual tour. I might mention that our President, Mr. Wm. Osborn, arranged a very nice display of honey at the Grundy County Corn and Poultry Show, held at Morris December 15-16-17-18; also at the Grundy County Fair, at Mazon, Mr. Mike Larson, of Gardner, exhibited a small swarm in an observation hive, which attracted considerable attention.

The weather has been such that we could not do much planning because when our people had time to attend any meeting the roads were bad and when the roads were passable there is a chance to catch up some of the outside jobs.

Piatt County.

(Emory Warner, Monticello, Secretary.)

We held four meetings last year, two in Monticello and two field meetings, one at the A. R. Larson apiary, at Bement, and one at the Lewis Taylor apiary. The field meetings were well attended, but the ones in Monticello not so good, on account of the road conditions.

At the Monticello meeting February 5, 1927, Professor V. G. Milum was with us and gave us some interesting facts about the life and habits of the honeybee, also on successful wintering. The following officers were elected: President, Searel Watts, Monticello; Vice-President, A. E. Larson, Bement; Vice-President, E. C. Wyne, Lintner; Secretary-Treasurer, Emory Warner, Monticello.

Ogle County.

(William T. Hardesty, Oregon, Secretary.)

We held one meeting during the year, February 8, 1927, with Mr. E. M. Warren, of Chicago, who gave us a very interesting talk. State Inspector A. L. Kildow was present and gave many helpful suggestions. A number of other speeches were made and topics discussed.

C. D. Huggans having previously been appointed to draw up resolutions and by-laws, the same were presented and read for the Association's approval and they were accepted.

Cook County.

(Ellsworth A. Mieneke, Chicago, Secretary.)

During 1926 the Cook County Beekeepers' Association made its biggest advance in the fight to clean up American foulbrood. Through the efforts of the Association, Mr. E. D. Turner, Assistant Director of Agriculture, was prevailed upon to attend the first meeting of the year, at which he acknowledged the necessity for special work in Cook County, and presented a plan which met the hearty approval of the members.

In several conferences with officers and members of the Association details of the plan were worked out.

Mr. J. R. Wooldridge was appointed to continue in charge of inspection in Cook County with the title "Assistant Chief Inspector." The inspection in 1926 was most successful, and with the organization which Mr. A. L. Kildow and Mr. Wooldridge have built up, the 1927 work should show another appreciable advance.

The annual election of officers took place at another indoor meeting at the close of a short program, and during the summer two field meetings were held at apiaries of members. Methods of handling bees were demonstrated and nationally known speakers gave interesting talks.

Northern Illinois and Southern Wisconsin.

(Frederick Claussen, Oregon, Secretary.)

The Northern Illinois and Southern Wisconsin Beekeepers' Association held its meeting on October 5, 1926, in the court house at Freeport, Illinois, with a fair attendance. The speakers were Mr. C. W. Duerrstein, of Galena, Illinois, who gave a talk on "When Beekeepers Get Together," and Inspector George Schwinn, of Pekin, Illinois, gave a talk on "The Experience of an Inspector."

The officers elected are: Frank Clark, of Ridott, Illinois, President; Frederick Claussen, Oregon, Illinois, Secretary, and George Weed, of Lanark, Illinois, Vice-President. The next meeting will be held at Oregon, Illinois, on October 4, 1927.

Champaign County.

(George Rasmussen, Champaign, Secretary.)

Realizing that individually we could not hope to overcome the conditions as they were, and desiring to be successful honey producers, several beekeepers, myself included, met at the Champaign County Farm Bureau in Champaign, Illinois, on February 18, 1926, and organized the Champaign County Beekeepers' Association. Our aim from the outset was to increase beekeeping in Champaign County, increase colony production, and secure adequate returns for the honey crop. Beekeeping here used to be quite extensive in the years gone by, several beekeepers having had apiaries of over a hundred colonies, but, alas, no trace can be found of them now, the bees, as well as the beekeepers, having passed on to the unknown. I do not know of a single apiary of more than 50 colonies in Champaign County at the present time. Many of the largest are in box hives or other antique equipment which is more of a hindrance to honey production than otherwise. Also foulbrood has taken its toll and was perhaps at the bottom of the disappearance of the large apiaries.

Mr. W. H. Force, of Champaign, was elected President; Mr. M. E. Smith, of Mahomet, was elected Vice-President, and George Rasmussen, of Urbana, was elected Secretary and Treasurer. At the annual election in January this year these same officers were elected for another term.

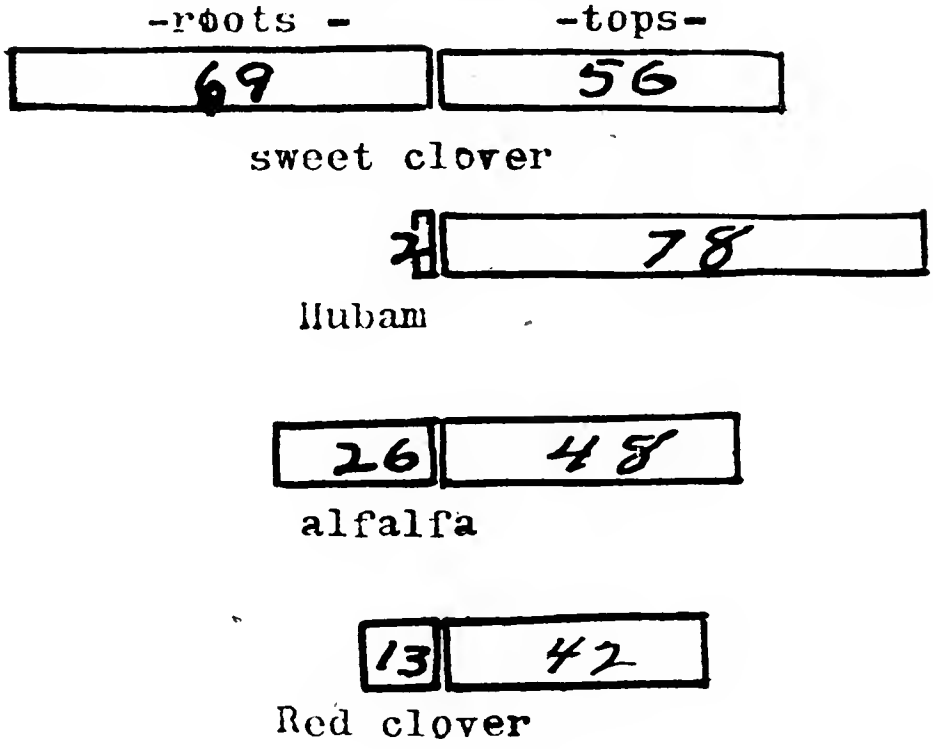
Our President, Mr. W. H. Force, was appointed foulbrood inspector and certainly did a very good job of cleaning up the diseased colonies, until now the county is apparently free from the disease.

Since the University of Illinois is at hand, we are very fortunate in having talent at our disposal for all meetings. Mr. V. G. Milum, Apiculturist at the University, and Mr. George E. King, of the University, have attended all meetings and given us very valuable information through lectures and personal demonstrations with the bees themselves. Beekeeping in Champaign County has been benefited very much by the efforts of these two men. We certainly do appreciate all they have done for us. Mr. W. H. Synder, of Decatur, spoke at one of our field meetings, and Mr. A. L. Kildow spoke at one of our indoor meetings.

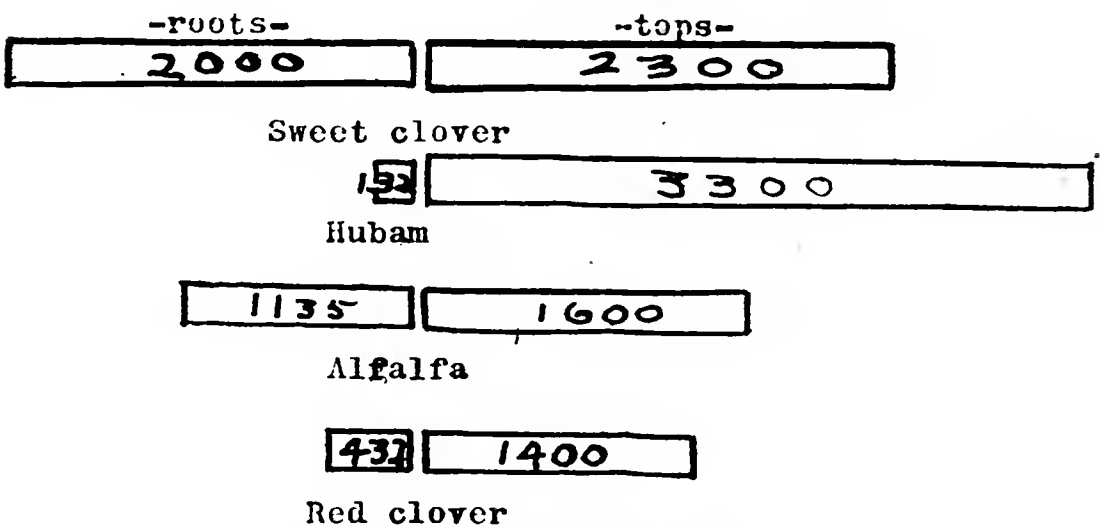
We have had four indoor meetings and three field meetings during the past year. Some of the subjects which we have had on our programs are as follows: (1) Life History of the Honey Bee. (2) Foulbrood. (3) Spring management. (4) Transferring. (5) Foulbrood Inspector and His Duties. (6) Packing Bees for Winter. (7) Beeswax. (8) Relation of the Queen to the Honey Crop. (9) Selling Honey.

We have had very good attendance at the meetings, especially the field meetings. Unfortunately we always pick a rainy or snow storm night for our indoor meetings, but we have been getting along very well anyhow.

Amount of Nitrogen in tops and roots of legumes per acre



Amount of Roots and Tops per Acre of Legumes



Comparison of nitrogen in tops and roots, and of roots and tops per acre of legumes in Illinois.

REPORT OF ILLINOIS SHORT COURSE IN BEEKEEPING, UNIVERSITY OF ILLINOIS, JANUARY 19–21.

The Short Course was well attended and there was much interest in the beekeeping sessions. There were several County Agents present from different parts of the State, quite a number of beekeepers and fruit men interested in bee culture.

More of the beekeepers should take advantage of this short course work. If we could get a sizeable crowd of men interested in commercial honey production, the University would make even greater efforts to get something worthwhile. There is no better place to obtain fundamental instruction than at an institution of this sort and it is a matter of regret that more beekeepers do not put themselves out to receive the benefit which is extended to them.

We give here a few remarks made by Professor Burleson on sweet clover in Illinois:

The best time to sow sweet clover is in February or March, in with wheat or oats. In Illinois the sweet clover has increased to over three-quarters of a million acres, or three times what it was in 1924.

Yellow sweet clover is more acid-tolerant than white. Either clover will stand considerable pasturing at the end of the first year and it is good feed for hogs. They love the roots. In September sweet clover is usually 18 inches high after the oats are off. The cattle may trample it down badly the first year. Severe pasturing will keep the blossoms going from the middle of June till fall.

The cost of turning under and the length of the decomposition period is greater when clover is 30 inches high. At 42 inches the clover is soft, there is less nitrogen but much swifter decomposition. One ton of sweet clover has as much nitrogen as eight tons of manure. A good sweet clover field is greatly enriched and often yields as high as 61 bushels of corn to the acre. It is estimated that the yield of corn to cover overhead expenses must be at least 37 bushels to the acre, oats 50 bushels, wheat 19 bushels, on $200 land.

There is no evidence to support the idea yet that the seed pod stage of sweet clover is the best time to plow under. Bee men will have to do their own experimenting on the relation between the clovers and the bees."

REPORT OF M. G. DADANT, DELEGATE TO CONVENTION OF AMERICAN HONEY PRODUCERS' LEAGUE, NEW ORLEANS, LOUISIANA.

To the President, Illinois State Beekeepers' Association:

Acting as delegate to the American Honey Producers' League meeting at New Orleans, on January 25-27, 1927, I beg leave to submit the following report:

There were 18 states represented by delegates at the meeting and a very fine program of papers presented.

What promisd to be a meeting of much discussion and dissension turned out to be one of enthusiasm and coordination on the part of members present.

The principal thing accomplished was the casting aside of the old constitution and the adopting in its place of a new one, some of the salient features of which are as follows:

1. The United States is divided into eleven regional districts, each comprising a number of states, and each of which are to elect their own director to the American Honey Producers' League, by mail balloting.

The dues for individual members to the American Honey Producers' League were raised to $3 per year, which included subscription to the new magazine put out by the League known as *"The American Honey Producer."*

In the case of memberships on the part of organizations, the initiation fee for state organizations are $10 and for county organizations or portions of the state, $5. This is the initiation fee and the annual dues for either the state or smaller organizations would be $3 for 25 members or fraction thereof. In other words, the county organization having 21 members would pay initiation fee of $5 and thereafter annual dues of $3 for the 21 members.

The large state associations, such as the Illinois State Association, would pay $10 initiation fee, and $3 for each 25 members in annual dues. In other words, with a representation of some 700 members, the annual dues would be $84 per year.

As to voting power of members, each individual member is entitled to one vote and each block of 25 members of an association also is entitled to one vote.

Optimism prevailed at the meeting, and the consensus of opinion was the major objective of the American Honey Producers' League of the future should be in the line of publicity for honey, and aid to marketing.

The new officers elected for the ensuing years are: H. F. Wilson, Madison, Wisconsin, President; Cary W. Hartman, Oakland, California, Vice-President; C. L. Corkins, Laramie, Wyoming, Secretary-Treasurer.

The directors are: Frank Rauchfuss, Denver, Colorado; T. W. Burleson, Waxahachie, Texas; E. S. Miller, Valparaiso, Indiana.

The election commissioner, to have charge of election of directors in June is J. A. Munro, Fargo, North Dakota.

Since the meeting at New Orleans, the directors have voted upon the place of meeting for next year, and it has been decided to have the next annual meeting in January at San Francisco, California.

It is the writer's opinion that the county organizations, as well as the State Association in Illinois, should get behind the American Honey Producers' League as now organized, and cooperate their efforts with those of the League in pushing for honey publicity.

Respectfully submitted,

M. G. DADANT, *Delegate New Orleans Meeting.*

REPORT OF STATE INSPECTOR OF APIARIES TO JUNE 30, 1926.

(By A. L. Kildow.)

In submitting my report for the year ending June 30, 1926, I wish to state that it is impossible to mention the vast amount of work done, and all the ways in which the beekeepers have received assistance; but I will give a general summary of the entire work.

First, the county organization plan was followed with a view of cleaning up disease and advancing apiculture.

About fifty inspectors have worked more or less and reported diseased colonies either treated or destroyed.

In cases where it was profitable to treat, that was done, but where the colonies were badly affected and weak they were destroyed.

The beekeepers as well as the inspectors realize that it is impracticable to treat a weak colony, as it requires too much time and attention to get them in a working condition, and to save the spread of disease they unite in saying "burn." Hence, we have destroyed many worthless colonies the past season and are assured of good results.

The north part of the State is not only giving attention to the production of honey, but to keeping bees better. This is clearly shown by the interest of the beekeepers in the improved methods and in the eradication of foulbrood.

The middle section is well under control with the exception of an occasional outbreak of disease, which is soon taken care of.

The southern part of the State seems to be practically free from disease except two or three counties.

Much progress has been made in the educational line. Counties have formed organizations and hold their regular meetings, where questions of interest are discussed. In some places apiculture and horticulture meetings have united and the best results have been obtained from such a union.

Field meets and demonstration meetings have been held in various counties and the beekeepers in general are in sympathy with the work and united to push ahead for the advancement of our industry.

REPORT JULY, 1925, TO JULY, 1926.

	Number apiaries.	Number colonies.	Apiaries diseased.
1925			
July	1,096	21,869	241
August	945	10,570	163
September	533	8,995	142
October	61	823	20
1926			
April	48	1,477	21
May	1,153	11,528	332
June	1,745	17,340	475
Total	5,581	72,602	1,394

1,035 colonies destroyed by owners and inspectors.

COMPARISON.

During the year ending June, 1924, we visited 2,025 apiaries with 35,834 colonies and 671 diseased apiaries. During the year ending June, 1925, we visited 3,471 apiaries with 40,828 colonies and 874 diseased apiaries. This year we visited 5,581 apiaries with 72,602 colonies and 1,394 diseased apiaries.

During this year we took in new territory where there had been no inspectors at work and there is where the greater part of the disease was found.

Many counties where the inspectors have been working for two years there is very little disease found and some counties report the disease completely under control.

With the continuation of this county organization plan and the hearty cooperation of the beekeepers and the Department of Agriculture, we will be able to make rapid progress and next year's report will show the results of our labor.

I wish to mention the special work done in Cook County. In the spring of 1926 locators were sent out to locate every beekeeper in the county; then later inspectors were at work to see that these apiaries were cleaned of disease and placed in a working condition.

At present the work seems to be very satisfactory and we expect good results from the summer's work.

REPORT OF DEPUTY INSPECTORS FOR 1926.

Mercer County.

(Deputy H. F. Miller.)

My appointment came quite late and I had other work on hand that could not be left at the time I was supposed to go out, and it was such nice weather all fall it was too bad—cold, wet, dry and most everything but just right. So I would get a day now and then. But oh, the grief I ran into at times between—ants of all kinds. I would rather be stung by bees than bit by those ants I ran into—crooked combs, box hives and other ridiculous things too many to mention. Every beekeeper seems to be different. Don't make much difference what shape the bees are in, just so he has some bees and don't get stung.

I put in eight days. Visited 32 apiaries running from one colony to 42 colonies. Inspected 276 colonies. Very little disease except European foulbrood. One case of American in an apiary of 42 stands, five colonies on the prettiest crooked combs you ever saw. Afterwards I had the nice job of transferring the lot to clean hives and full foundation.

Grundy County.

(Deputy C. J. Anderson.)

I got my commission in May and visited 43 apiaries with a total of 597 colonies of bees. Six apiaries had American foulbrood, 9 colonies were burned, 9 treated and 10 sets of combs were burned that were left in foulbrood hives, 28 stands in all.

Bees have plenty of honey in hives so they should winter well. Sweet clover is the chief honey plant here and there is a good prospect of an abundance of white clover for next year.

Woodford County.

(Deputy Benjamin H. Fischer.)

In my inspection work during 1926 I inspected 138 apiaries with a total of 859 colonies; 70 cases of American foulbrood and 9 of European foulbrood were found in 29 apiaries.

I have treated 58 infected colonies and burned 10 worthless colonies; the balance were treated or destroyed by the owners.

Twenty-one apiaries were reinspected and every known case of American foulbrood has been treated or destroyed.

In my first year's work I found 20 per cent of the colonies inspected were diseased. The second year I found 15 per cent, the third year 8 per cent. The last year's work has been done quite thoroughly and should make the percentage of infection remarkably low.

Twenty-three per cent of the colonies were in box hives.

This report does not cover all the bees in the county, for my inspection work was confined to the areas where most of the disease was found. On a general average of all the bees in the county, the percentage of infection would have been considerably lower. The report given is only from the apiaries inspected.

When I approach the beekeeper, the first thing I do is to try to get his friendship and the rest is easy. In most cases they will then be willing to reason with me and take advice. Very often when I visit beekeepers where I have not been before, and begin to introduce myself, they will say, "I know all about you, Mr. Blank told me all about you, and that you were in the neighborhood, so I have been looking for you."

The most trouble I ever had was at one edge of the county, where another inspector had been at work before I reached there.

Ogle, Carrol and Lee Counties.

(Deputy S. S. Clausen.)

Inspection work done in 1926 in Ogle, Carroll and Lee counties. I started work on May 12, 1926. I inspected a total of 2,743 colonies and found 375 of them diseased. I treated 105 and burned 240 of them, the balance were destroyed by the owners. These owners were up-to-date beekeepers. Most of these bees were found in Carroll county. I found a very few with European foulbrood, most of them with the genuine American foulbrood.

I never had much trouble with the owners to get them to have the bees destroyed, although some hang back until I insisted on destroying them if they wanted clean yards. People always treat me fine. Some give me my dinner, some my supper and some lodging, so my expenses never run very high. Some places where I stayed over night I was welcome to stay again.

One man in Ogle County had 60 box hives of about 12 by 12 inches in size and 18 inches high, with a 2-inch opening in the top and a yeast cake box on top of this opening, which held four sections. This was the way he was getting his honey. I have visited this apiary for the past two years and found foulbrood in this yard every time. I think a law ought to be passed not to use box hives in this State.

Last spring when I visited Mr. Edgar Confer's apiary in Lindenwood, he showed me a comb that had been in use for nearly forty years in his apiary, formerly owned by his father, Israel Confer. No disease had been in the apiary until last year.

The territory I have visited is pretty well cleaned up, except where there are a few careless beekeepers. I have cleaned up the worst localities. There is still a big territory to inspect.

Whiteside County.

(Deputy Roy Roselieb.)

Following is my report for 1926, as requested:

	Colonies.	E. F. B.	A. F. B.	Box hives.	Apiaries.
May	493	89	42	93	
June	700	107	60	135	
July	400	21	10	17	
August	179	13	18	69	
Total	1,772	230	130	314	203

All inspection was made in Whiteside County.

As I did not get my credentials until May 15th, it made me a little late in getting started. However, I covered the entire county with the exception of a few apiaries which I did not hear of until it was too late for inspection.

This missing of apiaries is one thing with which an inspector in a new territory has to contend, but this may be overcome through the cooperation of the beekeepers with the inspector.

In my opinion our greatest menace to the thorough eradication of bee brood disease is the so-called "box hive," which includes in its class any "hive" in which the combs are not removable without destroying or damaging them to such an extent as to cause danger of robbing.

My report shows 20.3 per cent of diseased colonies and 17.7 per cent of "box hives," which shows I found this county in poor shape my first season, but expect to find it in considerable better shape in 1927.

Edgar County.

(Deputy Maxel Mapes.)

Owing to the fact that it was rather late last spring before the position of inspector for this district was mentioned to me, I had already planned other work that prevented me from giving the beekeepers the service they were entitled to during the early part of the season; while in the after part of the summer there was a great deal of rainy weather, which made trips rather uncertain and bad going on a good many roads.

Practical beekeepers are widely scattered in this part of the State, while there are thousands of colonies in small apiaries, consisting of from one to 30 colonies, owned by farmers who know very little about modern methods of beekeeping.

American foulbrood is widely scattered, with only a few sections of the county where it is not found.

The loss among these farmer-beekeepers has been very heavy during the last few years.

In discussing the situation with Mr. Charles Kruse, we estimated that the loss in this county during the last five years amounted to not less than 75 per cent of the total number of colonies.

Bees are often sold at farm sales, one or more to a customer, and hauled to various communities without inspection, which would account in part, at least, for American foulbrood being so badly scattered.

Very few of these farmer-owned bees are on straight combs, which makes thorough inspection very slow and difficult.

I do not believe we will be able to eradicate American foulbrood without making a complete canvass of certain districts and treating or destroying every infected colony, and aided by a law prohibiting the moving of bees or equipment without a certificate of inspection.

My inspection work of last season totals up as follows:

Apiaries visited 33, containing 395 colonies, inspected 219 colonies, 35 in boxes, 33 infected with American foulbrood and no European foul brood. Drove 297 miles and worked five and one-fourth days.

The most thoroughly infected combs I have seen, I found at the home of C. L. Mendenhall, R. R. No. 1, Oakwood, Illinois, a short distance south and west of Danville.

These combs were in Buckeye hives and had been given to Mr. Mendenhall by a brother-in-law living in Indianapolis, who had quit beekeeping, and no wonder he had quit.

Mr. Mendenhall had hived swarms on these combs, and when I inspected them, about eight weeks, later, I do not believe a single cell of brood had lived to emerge.

Montgomery, Macoupin, Bond, Madison and Green Counties.

(Deputy O. W. Kennett.)

In the year 1926 I did inspection work in part of five counties. I inspected 2,592 colonies in 248 apiaries. I found 33 colonies had American foulbrood and 23 colonies with European foulbrood; 339 colonies were in box hives.

All colonies diseased were burned or treated. The coming year I expect to burn all colonies affected with American foulbrood, as I do not consider that it pays to try to save them.

I found there were not so many colonies this year as last. Many died out in the winter from starvation. I found that foulbrood had decreased more than half since last year.

The only beekeepers that had much of a surplus crop of honey last year were those near fields of sweet clover. I have had several beekeepers to report to me that their bees have traveled a distance of six miles to fields of sweet clover.

JoDaviess and Stephenson Counties.

(Deputy C. W. Duerrstein)

During the season for inspection work in the year 1926, I visited 146 apiaries, consisting of 2,064 colonies. I inspected and examined 1,176 colonies and found 221 infected with European and American foulbrood; 204 of these were treated by shaking or requeening, and the remaining 17 were burned by owner and myself.

I find that there is about 10 per cent of my area infected with these diseases and that about eight-tenths of this percentage is on the western half of the county of JoDaviess, along the Mississippi River. The greater part of this district is timber and low lands and also the bees used are of the black strain, which accounts for this district being more easily infected.

My idea is that more colonies should be burned and requeened in this district.

Bureau County.

(Deputy C. L. Pierce.)

Brood chambers have lots of brood but very little honey, and if the frost comes too soon there won't be enough honey to carry the bees through winter. Honey outlook was not very good, owing to the wet weather. Colonies averaged about nine pounds to the colony.

I inspected 3,100 colonies. Some of the bee men that left an extra super full of honey with their bees did much better than others that had just the brood chamber.

There are a good many box hives beekeepers in my territory, but I find very little foulbrood in these box hives. The beekeeper does not get much honey in them, either.

DeKalb County.

(Deputy C. H. Tudor.)

During 1926 I visted 167 people having bees, with a total of 2,368 colonies. I inspected 1,287 and found 199 cases of American foulbrood; 115 were burned and 84 were treated. I also found five cases of European. Box hives, 332.

The largest per cent of disease was in the south part of the county, where they never had a good cleanup until this year. I do not look for as much disease in 1927, as the people are cooperating and asking for help and our county association meetings are helping.

I think the bee tour last year will help. It will keep some of the folks awake and make better beekeepers. I find many who do not know there is a law for inspection, but I have had no trouble in carrying on my work but once. The man would not allow inspection and he was given three days to think it over. When I returned he had been to the county seat to see a lawyer, who told him there was no such law in the State. You can not blame a poor beekeeper who does not know, but this man found out there was a law, and he was glad to have me burn up one stand before I left and asked me to come this year.

I find the older men, those who have had bees for forty years and no foulbrood yet, the hardest to get along with (poor fellows). I think the best treatment for disease is fire and then an inspector knows it is gone and no chance for someone to make a bad job afterwards.

DuPage County.

(Deputy William J. Wallanches.)

During my inspection in 1926, the owners were very glad to have me look over their colonies. Most of the apiaries were small and some were in odd places. Bees were in nail kegs, soap boxes and, in one instance, I found three box hives in an attic with bees flying in and out of the window.

Not only did I give instruction to those with disease, but I also gave them general information regarding the keeping of bees. It usually happened that the owner of a few colonies was not familiar with caring for bees and kept them merely for a little honey for home use. In some cases, when I found disease, the owner would ask me to help treat, which I did.

In my experience I have found that it does not pay to treat diseased colonies after the honeyflow, as the bees have a difficult time to rebuild their combs and it usually leaves the colonies weak. I recommend that such colonies be burned.

Cook County.

(Deputy T. A. Kragness.)

Producers of all kinds are forever crying for markets—profitable markets. The cry for markets is constant and continuous, year in and year out, in bad times and in good times the cry for markets goes on and on and on. There is evidently something radically wrong with the accepted current methods of selling products of every kind; for the cost of selling the goods quite too often is more than the cost of producing the goods. This is true of honey. Now honey is the best of the sweets, and the people are eating more sweets today than at any time heretofore; but honey is quite unknown to the vast majority of the people; in fact nine-tenths of the people are even ignorant of the taste of honey. This ignorance of the taste of honey means that nine-tenths of the honey market is undeveloped. And the one-tenth of the people who buy and use honey, buy and use it sparingly, regarding honey more of a luxury than of a necessity. The cause of this condition is due to the fact that the consumers pay too much for their honey and the producers receive too little for their honey; and the shuttle-cocks—the go-betweens—get the lion's share of the honey crop money. The marketing of the honey crop to the best advantage to the consumers and producers is the most important problem for the beekeepers to solve, and this problem can be solved easily and quickly, if we will use our brains more and our ears less.

The weather concerns us all, and all about equally. A study of the Weather Bureau records is very instructive. The temperature records for the district of Chicago, covering a period of 48 years, show that the mean temperature goes below 60 degrees F. about the first of October and remains below 60 degrees F. until the latter part of May. The average daily variation in temperature at Chicago is about 13 de-

grees F. The approximate number of days that the temperature goes below 60 degrees F. in Illinois is 212 days.

Mr. Herbert Janvrin Brown, meteorologist, predicts frigid winter and no summer next year. "The world's nations will have to use war time food control powers to ward off starvation," he says, "and that 1927 will be like the year 1816 as to weather. The same oceanic changes that prevailed 110 years ago are now in evidence, and we will have the severest winter in 1926-27 ever known on the North American continent. America is practically surrounded by cold water and will be by next year." Mr. Brown bases his forecasts on the changes in the amount of heat given off by the sun and absorbed by the oceans.

Apiaries visited, 143; colonies examined, 1,263; colonies diseased, American foulbrood, 36; colonies destroyed, 36.

Champaign County.

(Deputy W. H. Force.)

The inspection of apiaries in Champaign County and adjoining territory in Vermilion and Douglas counties has presented several difficulties because this seems to be the first attempt to thoroughly cover this region. A few people very unwillingly submitted to it, but generally people have cooperated with the inspector in helping to locate and improve conditions. A summation of this work shows the following:

Number of beekeepers found, 382; living colonies of bees, 2,013; dead colonies, 162; total, 2,175 colonies.

Colonies found diseased, American foulbrood, 235 or 11.56 per cent of the living colonies; European foulbrood, 38 or 1.88 per cent; total diseased, 273, or 13.61 per cent of all the living colonies.

Diseased colonies burned, 44 or 16.11 per cent of those found diseased, or 2.18 per cent of all colonies.

Colonies found housed in boxes, gums, kegs, etc., 435, or 21.61 per cent of the living colonies.

Colonies found housed in hives with cross-built combs, 187, or 9.29 per cent. Total, 622 or 30.9 per cent of all living colonies on immovable combs.

About half of the dead colonies found showed unmistakable evidence of death from American foulbrood, others were beyond diagnosis. In addition to those here reported, there were several instances found in which owners had lost all of their bees. Such apiaries had contained from two to 18 or more colonies. A few known cases of American foulbrood still remain in the county. These were found too late to treat and appeared populous enough to winter over successfully. All such, as well as those colonies in hives, boxes, gums, or other receptacles with cross-built combs, and hence not readily accessible for inspection, have been ordered transferred into good equipment next spring.

Piatt County.

(Deputy Emory Warner.)

During the year I visited 159 apiaries, 1,156 colonies in all, finding 104 cases of American foulbrood and 21 cases of European. We cleaned up all the bees around Pierson, which was the worst infected area in

Piatt County. This was all clean the year before, showing that we must be on the watch each year.

I have one other place in Piatt County where there has been disease the past two years, and we get them all apparently clean and American foulbrood breaks out again. I am going to watch this very closely this year and try to find the careless one who is scattering the disease. We have the rest of the county pretty well under control. Bement is the honor place in amount of new equipment purchased the last two years.

Kendall County.

(Deputy John O'Brian.)

The following is a statement of the number of colonies I examined and treated: Number examined, 1,088; number diseased, 339; number treated, 241; dead, 78; burned, 130.

Kane and McHenry Counties.

(Deputy E. J. Bryant.)

During 1926 I inspected 118 apiaries and found 213 cases of American foulbrood, but little European and very light. Treated 213, burned 77. I worked in the north half of Kane County, part of McHenry County and a little along the line of McHenry and Lake. Found no disease in Lake.

I found plenty of opposition in McHenry County, as they didn't know much about inspection and the cow testing made it hard for me. "Cow" would be the first word when I told them what I was there for. Some refused to let me come on their place until they got legal advice from the County Judge. But I managed to get along and had no battles.

I think it will be much easier this season, as I have organized McHenry County. We did not have a large attendance, as the roads were too icy. We will have a meeting this month and get more members. I hope to get up near the Wisconsin line soon, in the northwest part of the county, which has not been looked after yet.

I have been out two days this month. Found one apiary of eight all dead with American foulbrood probably in 85 per cent of the cells. Very bad; and he had been keeping bees 15 years and didn't know what was the matter. A little experience I had with an old timer from the old country. When I called on him he said I could not tell him anything about bees, but I did. I gassed one and told him to burn it. Said he would in three days. In three days I came back past his place. The hive had been moved. I stopped, went to the hive, opened it and some bees flew out. He had cut out the combs and put frames back.

I asked what he had done with the combs and he had thrown them over the fence in the hog yard. So I do not trust any of them now.

Rock Island County.

(Deputy Dow Ripley.)

I visited 66 apiaries with 707 colonies. Found nine apiaries with American and 12 with European foulbrood. The most American was around Silvis and Carbon Cliff, but, with the fine cooperation of the beekeepers, I did not find a case when I reinspected late in the season.

There were quite a number who did not know bees were inspected, but nearly all were glad to learn how to keep bees better and keep better bees. Many ordered Italian queens and used full sheets of foundation that had been keeping black bees in box hives. I believe, in a short time, Illinois will have the least disease of any state.

Perry County.

(Deputy Roy I. Annear.)

In 1926, I inspected about 1,200 colonies in Perry County, but did not cover all the county. I found the bees in much better shape than in 1925. Diseased colonies about 2 per cent, as compared with 10 per cent in 1924.

Most of the American foulbrood was found in yards where the beekeeper paid no attention to his bees. I made one trip to Belleville, St. Clair County. More inspection is needed there. The bees are badly diseased and the average beekeeper does not know what to do. More organization and education is what we need.

Livingston, Iroquois, Ford, Kankakee and LaSalle Counties.

(Deputy J. T. Henricks.)

Beekeeping is progressing. Beekeepers are awake to the fact that inspection is necessary where it never has been before. The work also teaches those who have not been visited.

We should organize more local county associations for better results. This cooperation is a great help. Nineteen hundred twenty-six has been a bad year and at that disease is getting less. One main factor is that we must not neglect any kind of a colony, regardless of the season.

Watch the queens. If they do not come up to standard kill them and give good ones. Good queens help keep disease out. I inspected 2,945 colonies, including about 342 that had not completely carried out treatment from the year before or had not been reached in 1925.

TOTAL REPORT FOR 1926.

Counties.	Colonies.	Colonies diseased.	Total.
Livingston	737	82	819
Iroquois	825	168	993
Ford	368	58	426
Kankakee	368	27	395
LaSalle	305	7	312
Total	2,603	342	2,945

Will County.

(Deputy Mathias Schmitz.)

I inspected several hundred colonies in 1926, about 8 per cent of which had American foulbrood.

Farmers in this county having bees are beginning to take more interest in them. This is evidently the result of county organization work and newspaper accounts of bees. A great deal of good was accomplished by the beekeepers' tour last summer and many are looking forward to the tour for 1927.

(Deputy Edward A. Winkler.)

During 1926 there were between 2,000 and 3,000 colonies of bees inspected in Will County. Considerable trouble was experienced in Lockport township, necessitating arrest and court proceedings. The objective apiary under inspection has about 74 per cent of the bees infected with American foulbrood.

During the court proceedings it was brought out that our foulbrood law is not explicit enough, especially in section 4, and a revision of this section is badly needed.

With the many timber lands in the north, east and southern sections of the county, it makes work here slower than otherwise, as reinfection frequently occurs. We have found that more speed and better work is accomplished, at less cost, where two deputies work together, that where a full day is put in at considerable distance from home.

(Deputy George W. Lynn.)

In 1926, with the limited time I could give to the work, I tried to locate the small neglected apiaries. I found 14 such yards with a total of 148 colonies, 25 American foulbrood, of which 17 were treated and 8 were burned.

FORMATION OF THE ILLINOIS STATE BEEKEEPERS' ASSOCIATION.

SPRINGFIELD, ILL., *February 26, 1891.*

The Capitol Beekeepers' Association was called to order by President P. J. England.

Previous notice having been given that an effort would be made to form a State Association, and there being present beekeepers from different parts of the State, by motion, a recess was taken in order to form such an association.

P. J. England was chosen temporary chairman and C. E. Yocum temporary secretary. On motion, the Chair appointed Thos. G. Newman, C. P. Dadant and Hon. J. M. Hambaugh a Committee on Constitution.

Col. Chas. F. Mills addressed the meeting on the needs of a State association and stated that it was his opinion that the beekeepers should have a liberal appropriation for a State Apiarian Exhibit at the World's Columbia Exposition.

A motion to adjourn 'till 1:30 p. m. prevailed.

AFTERNOON SESSION.

The Committee on Constitution reported a form for same which, on motion, was read by the Secretary, by sections serially.

Geo. F. Robbins moved to substitute the word "shall" for "may" in the last clause of Section 1, Article III. This led to a very animated discussion, and the motion was lost.

J. A. Stone moved to amend the above-named section by striking out the word "ladies" and all that followed of the same section, which motion led to further discussion, and motion finally prevailed.

Section 2, Article II, relating to a quorum was, on motion, entirely stricken out.

Mr. Robbins moved to amend Article V by adding the words "Thirty days' notice having been given to each member." Prevailed.

Thos. G. Newman moved to adopt the Constitution, so amended, as a whole. Which motion prevailed.

(See Constitution).

J. A. Stone moved that the Chair appoint a Nominating Committee of three on permanent organization. Prevailed.

Chair appointed as such committee, Col. Chas. F. Mills, Hon. J. M. Hambaugh, and C. P. Dadant.

Committee retired and in a few minutes returned, submitting the following named persons as candidates for their respective offices:

For President—P. J. England, Fancy Prairie.

For Vice Presidents—Mrs. L. Harrison, Peoria; C. P. Dadant, Hamilton; W. T. F. Petty, Pittsfield; Hon. J. M. Hambaugh, Spring; Dr. C. C. Miller, Marengo.

Secretary—Jas. A. Stone, Bradfordton.

Treasurer—A. N. Draper, Upper Alton.

Mr. Black moved the adoption of the report of the Committee on Nominations. The motion prevailed, and the officers as named by the committee were declared elected for the ensuing year.

Hon. J. M. Hambaugh moved that Mr. Thos. G. Newman, Editor American Bee Journal, of Chicago, be made the first honorary member of the association. Prevailed.

At this point, Col. Chas. F. Mills said:

"Mr. Chairman, I want to be the first one to pay my dollar for membership," at the same time suiting his action to his words, and others followed his example, as follows:

CHARTER MEMBERS.

Col. Chas. F. Mills, Springfield.
Hon. J. M. Hambaugh, Spring.
Hon. J. S. Lyman, Farmingdale.
C. P. Dadant, Hamilton.
Chas. Dadant, Hamilton.
A. N. Draper, Upper Alton.
S. N. Black, Clayton.
Aaron Coppin, Wenona.
Geo. F. Robbins, Mechanicsburg.
J. W. Yocum, Williamsville.
Thos. S. Wallace, Clayton.
A. J. England, Fancy Prairie.
P. J. England, Fancy Prairie.
C. E. Yocum, Sherman.
Jas. A. Stone, Bradfordton.

FIRST HONORARY MEMBER.

Thos. G. Newman, Editor American Bee Journal, Chicago.

STATE OF ILLINOIS—DEPARTMENT OF STATE.

ISAAC N. PEARSON, *Secretary of State.*

To all to whom these Presents shall come—GREETING:

Whereas, A certificate duly signed and acknowledged having been filed in the office of the Secretary of State on the 27th day of February, A. D. 1891, for the organization of the Illinois State Beekeepers' Association, under and in accordance with the provisions of "An Act Concerning Corporations," approved April 18, 1872, and in force July 1, 1872, and all acts amendatory thereof, a copy of which certificate is hereunto attached.

Now, Therefore, I Isaac N. Pearson, Secretary of State of the State of Illinois, by virtue of the powers and duties vested in me by law, do hereby certify that the said, The Illinois State Beekeepers' Association, is a legally organized corporation under the laws of the State.

In Testimony Whereof, I hereunto set my hand and cause to be affixed the great seal of State.

Done at the city of Springfield, this 27th day of February, in the year of our Lord one thousand eight hundred and ninety-one, and the Independence of the United States the one hundred and fifteenth.

[SEAL] I. N. PEARSON, *Secretary of State*

STATE OF ILLINOIS, }
County of Sangamon } ss.

To Isaac N. Pearson, Secretary of State:

We, the undersigned, Perry J. England, Jas. A. Stone and Albert N. Draper, citizens of the United States, propose to form a corporation under an act of the General Assembly of the State of Illinois, entitled, "An Act Concerning Corporations," approved April 18, 1872, and all acts amendatory thereof; and for the purpose of such organizations, we hereby state as follows, to-wit:

1. The name of such corporation is, The Illinois State Beekeepers' Association.

2. The object for which it is formed is to promote the general interests of the pursuit of bee-culture.

3. The management of the aforesaid Association shall be vested in a board of three Directors, who are to be elected annually.

4. The following persons are hereby selected as the Directors, to control and manage said corporations for the first year of its corporate existence, viz: Perry J. England, Jas. A. Stone, and Albert N. Draper.

5. The location is in Springfield, in the county of Sangamon, State of Illinois.

(Signed) PERRY J. ENGLAND,
JAS. A. STONE,
ALBERT N. DRAPER.

STATE OF ILLINOIS, }
Sangamon County, } ss.

I, S. Mendenhall, a notary public in and for the county and State aforesaid, do hereby certify that on this 26th day of February, A. D. 1891,

personally appeared before me, Perry J. England, James A. Stone, and Albert N. Draper, to me personally known to be the same persons who executed the foregoing certificate, and severally acknowledged that they had executed the same for the purpose therein set forth.

In witness whereof, I have hereunto set my hand and seal the day and year above written.

[Seal] S. MENDENHALL, *Notary Public.*

CONSTITUTION AND BY-LAWS OF THE ILLINOIS STATE BEEKEEPERS' ASSOCIATION.

Constitution.

Adopted Feb. 26, 1891.

ARTICLE I.

This organization shall be known as The Illinois State Beekeepers' Association, and its principal place of business shall be at Springfield, Ill.

ARTICLE II.—OBJECT.

Its object shall be to promote the general interests of the pursuit of bee-culture.

ARTICLE III.—MEMBERSHIP.

Section 1. Any person interested in apiculture may become a member upon the payment to the Secretary of an annual fee of one dollar and fifty cents ($1.50). (Since amended to $1.75). (Amendment adopted at annual meeting, December, 1919): And any affiliating association, as a body, may become members on the payment of an aggregate fee of fifty cents (50c) per member, as amended November, 1910.

Sec. 2. Any person may become honorary member by receiving a majority vote at any regular meeting.

ARTICLE IV.—OFFICERS.

Section 1. The officers of this association shall be, President, Vice President, Secretary and Treasurer. (Since amended to include 5 regional Vice Presidents.) Their terms of office shall be for one year, or until their successors are elected and qualified.

Sec. 2. The President, Secretary and Treasurer shall constitute the Executive Committee.

Sec. 3. Vacancies in office—by death, resignation and otherwise—shall be filled by the Executive Committee until the next annual meeting.

ARTICLE V.—AMENDMENTS.

This Constitution shall be amended at any annual meeting by a two-thirds vote of all the members present—thirty days' notice having been given to each member of the association.

By-Laws.

ARTICLE I.

The officers of the association shall be elected by ballot and by a majority vote.

ARTICLE II.

It shall be the duty of the President to call and preserve order at all meetings of this association; to call for all reports of officers and committees; to put to vote all motions regularly seconded; to count the vote at all elections, and declare the results; to decide upon all questions of order, and to deliver an address at each annual meeting.

ARTICLE III.

The Vice Presidents shall be numbered, respectively, First, Second, Third, Fourth and Fifth, and it shall be the duty of one of them, in his respective order, to preside in the absence of the President.

ARTICLE IV.

Section 1. It shall be the duty of the Secretary to report all proceedings of the association, and to record the same, when approved, in the Secretary's book; to conduct all correspondence of the association, and to file and preserve all papers belonging to the same; to receive the annual dues and pay them over to the Treasurer, taking his receipt for the same; to take and record the name and address of every member of the association; to cause the Constitution and By-Laws to be printed in appropriate form and in such quantities as may be directed by the Executive Committee from time to time, and see that each member is provided with a copy thereof; to make out and publish annually, as far as practicable, statistical table showing the number of colonies owned in the spring and fall, and the amount of honey and wax produced by each member, together with such other information as may be deemed important, or be directed by the Executive Committee; and to give notice of all meetings of the association in the leading papers of the State, and in the bee journals at least four weeks prior to the time of such meeting.

Sec. 2. The Secretary shall be allowed a reasonable compensation for his services, and to appoint an assistant Secretary if deemed necessary.

ARTICLE V.

It shall be the duty of the Treasurer to take charge of all funds of the association, and to pay them out upon the order of the Executive Committee, taking a receipt for the same; and to render a report of all receipts and expenditures at each annual meeting.

ARTICLE VI.

It shall be the duty of the Executive Committee to select subjects for discussion and appoint members to deliver addresses or read essays, and to transact all interim business.

ARTICLE VII.

The meeting of the association shall be, as far as practicable, governed by the following order of business:

Call to order.
Reading minutes of last meeting.
President's address.
Secretary's report.
Treasurer's report.
Reports of committtees.
Unfinished business.
Reception of members and collection.

Miscellaneous business.
Election and installation of officers.
Discussion.
Adjournment.

ARTICLE VIII.

These By-Laws may be amended by a two-thirds vote of all the members present at any annual meeting.

C. E. YOCUM,
AARON COPPIN,
GEO. F. ROBBINS.

Following is a copy of the law passed by the Illinois Legislature May 19, and signed by the Governor June 7, 1911, to take effect July 1, 1911:

STATE FOULBROOD LAW.

State Inspector of Apiaries.

Preamble.
§ 1. State Inspector of Apiaries—appointment — term — assistants —per diem.
§ 2. Foulbrood, etc. — what declared nuisances — inspection — notice to owner or occupant—treatment—abatement of nuisance —appeal.
§ 3. Annual Report.
§ 4. Penalties.

House Bill No. 670.

(Approved June 7, 1911.)

AN ACT *to prevent the introduction and spread in Illinois of foulbrood among bees, providing for the appointment of a State Inspector of Apiaries and prescribing his powers and duties.*

Whereas, the disease known as foulbrood exists to a very considerable extent in various portions of this State, which, if left to itself, will soon exterminate the honey bees; and

Whereas, the work done by an individual beekeeper or by a State Inspector is useless so long as the official is not given authority to inspect and, if need be, to destroy the disease when found; and

Whereas, there is a great loss to the beekeepers and fruit growers of the State each year by the devasting ravages of foulbrood.

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That the Governor shall appoint a State Inspector of Apiaries, who shall hold his office for the term of two years, and until his successor is appointed and qualified, and who may appoint one or more assistants, as needed, to carry on the inspection under his supervision. The Inspector of Apiaries shall receive for each day actually and necessarily spent in the performance of his duties the sum of four dollars to be paid upon bills of particulars certified to as correct by the said State Inspector of Apiaries, and approved by the Governor.

Sec. 2. It shall be the duty of every person maintaining or keeping any colony or colonies of bees to keep the same free from the disease known as foulbrood and from every contagious and infectious disease among bees. All beehives, beefixtures or appurtenances where foulbrood or other contagious or infectious diseases among bees exists, are hereby declared to be nuisances to be abated as hereinafter prescribed. If the Inspector of Apiaries shall have reason to believe that any apiary is infected by foulbrood or other contagious disease, he shall have power to inspect, or cause to be inspected, from time to time, such apiary, and for the purpose of such inspection he, or his assistants, are authorized during reasonable business hours to enter into or upon any farm or premises, or other building or place used for the purpose of propagating or nuturing bees. If said Inspector of Apiaries, or his assistants, shall find by inspection that any person, firm or corporation is maintaining a nuisance as described in this section, he shall notify in writing the owner or occupant of the premises containing the nuisance so disclosed of the fact that such nuisance exists. He shall include in such notice a statement of the condition

constituting such nuisance, and order that the same be abated within a specified time and a direction, written or printed, pointing out the methods which shall be taken to abate the same. Such notice and order may be served personally or by depositing the same in the postoffice properly stamped, addressed to the owner or occupant of the land or premises upon which such nuisance exists, and the direction for treatment may consist of a printed circular, bulletin or report of the Inspector of Apiaries, or an extract from same.

If the person so notified shall refuse or fail to abate said nuisance in the manner and in the time prescribed in said notice, the Inspector of Apiaries may cause such nuisance to be abated, and he shall certify to the owner or person in charge of the premises the cost of the abatement and if not paid to him within sixty days thereafter the same may be recovered, together with the costs of action, before any court in the State having competent jurisdiction.

In case notice and order served as aforesaid shall direct that any bees, hives, beefixtures or appurtenances shall be destroyed and the owner of such bees, hives, beefixtures or appurtenance shall consider himself aggrieved by said order, he shall have the privilege of appealing within three days of the receipt of the notice to the County Court of the county in which such property is situated. The appeal shall be made in like manner as appeals are taken to the County Court from judgments of justice of the peace. Written notice of said appeal served by mail upon the Inspector of Apiaries shall operate to stay all proceedings until the decision of the County Court, which may, after investigating the matter, reverse, modify or affirm the order of the Inspector of Apiaries. Such decision shall then become the order of the Inspector of Apiaries, who shall serve the same as hereinbefore set forth and shall fix a time within which such decision must be carried out.

Sec. 3. The Inspector of Apiaries shall, on or before the second Monday in December of each calendar year, make a report to the Governor and also to the Illinois State Beekeepers' Association, stating the number of apiaries visited, the number of those diseased and treated, the number of colonies of bees destroyed and the expense incurred in the performance of his duties.

Sec. 4. Any owner of a diseased apiary or appliances taken therefrom, who shall sell, barter or give away any such apiary, appliance, queens or bees from such apiary, expose other bees to the danger of contracting such disease, or refuse to allow the Inspector of Apiaries to inspect such apiary, or appliances, shall be fined not less than $50 nor more than $100.

Approved June 7, 1911.

(Bill passed in the 50th General Assembly.)

BEEKEEPERS' ASSOCIATION.

THE ORIGINAL BILL.

§ 1. Appropriates $1,000 per annum —provisio.
§ 2. How drawn.
§ 3. Annual Report.

AN ACT *making an appropriation for the Illinois State Beekeepers' Association.*

Whereas, The members of the Illinois State Beekeepers' Association have for years given much time and labor without compensation in the endeavor to promote the interests of the beekeepers of the State; and,

Whereas, The importance of the industry to the farmers and fruit-growers of the State warrants the expenditure of a reasonable sum for the holding of annual meetings, the publication of reports and papers containing practical information concerning beekeeping, therefore, to sustain the same and enable this organization to defray the expenses of annual meetings, publishing reports, suppressing foulbrood among bees in the State, and promote the industry in Illinois;

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That there be and is hereby appropriated for the use of the Illinois State Beekeepers' Association the sum of one thousand dollars ($1,000) per annum for the year 1917-1918, for the purpose of advancing the growth and developing the interests of the beekeepers of Illinois, said sum to be expended under the direction of the Illinois State Beekeepers' Association for the purpose of paying the expenses of holding annual meetings, publishing the proceedings of said meetings suppressing foulbrood among bees in Illinois, etc.

Provided, however, That no officer or officers of the Illinois State Beekeepers' Association shall be entitled to receive any moneys compensation whatever for any services rendered for the same, out of this fund.

Sec. 2. That on the order of the President, countersigned by the Secretary of the Illinois State Beekeepers' Association, and approved by the Governor, the Auditor of Public Accounts shall draw his warrant on the Treasurer of the State of Illinois in favor of the treasury of the Illinois State Beekeepers' Association for the sum herein appropriated.

Sec. 3. It shall be the duty of the Treasurer of the Illinois State Beekeepers' Association to pay out of said appropriation, on itemized and receipted vouchers, such sums as may be authorized by vote of said organization on the order of the President countersigned by the Secretary, and make annual report to the Governor of all such expenditures, as provided by law.

Itemized in the Omnibus Bill as follows:

For shorthand reporting	$ 200.00
For postage and stationary	50.00
For printing	550.00
Expense of meetings	200.00
Total amount of the appropriation	$1,000.00

The Assembly ruled that this is not to be paid in *lump*, but drawn on itemized accounts.

CODE OF RULES AND STANDARDS FOR GRADING APIARIAN EXHIBITS AT FAIRS AS ADOPTED BY ILLINOIS STATE BEEKEEPERS' ASSOCIATION.

COMB HONEY.

Rule 1. Comb honey shall be marked on a scale of 100, as follows:

Quantity	40	Style of display	20
Quanlity	40		

Rule 2. Points of quality should be:

Variety	5	Straightness of comb	5
Clearness of capping	10	Uniformity	5
Completeness of capping	5	Style of Section	5
Completeness of filling	5		

Remarks: 1. By variety is meant different kinds, with regard to the sources from which the honey is gathered, which adds much interest to an exhibit.

2. By clearness of capping is meant freedom from travel stain and a water soaked appearance. This point is marked a little high, because it is a most important one. There is no better test of the quality of comb honey than the appearance of the cappings. If honey is taken off at the proper time, and cared for as it should be, so as to preserve its original clear color, body and flavor will take care of themselves, for excellence in the last two points always accompanies excellence in the first. Clover and basswood honey should be white; heartease, a dull white tinged with yellow; and Spanish needle, a bright yellow.

3. By uniformity is meant closeness of resemblance in the sections composing the exhibit.

4. By style is meant neatness of the sections, freedom from propolis, etc.

5. Honey so arranged as to show every section should score the highest in style of display, and everything that may add to the tastiness and attractiveness of an exhibit should be considered.

EXTRACTED HONEY.

Rule 1. Extracted honey should be marked on a scale of 100, as follows:

Quantity	40	Style and display	15
Quality	45		

Rule 2. Points of quality should be:

Variety	10	Style of package	10
Clearness of color	5	Variety of package	5
Body	5	Finish	5
Flavor	5		

Remarks: 1. Light clover honey pouring out of a vessel is a very light straw color; Spanish needle, a golden hue, and dark clover honey, a dull amber.

2. Style of package is rated a little high, not only because in that consists the principal beauty of an exhibit of extracted honey, but also because it involves the best package for marketing. We want to show honey in the best shape for the retail trade, and that, in this case, means

the most attractive style for exhibition. Glass packages should be given the preference over tin; flint glass over green, and smaller vessels over larger, provided the latter run over one or two pounds.

3. By variety of package is meant chiefly different sizes; but small pails for retailing, and, in addition, cans or kegs (not too large) for wholesaling, may be considered. In the former case, pails painted in assorted colors, and lettered "Pure Honey," should be given the preference.

4. By finish is meant capping, labeling, etc.

5. Less depends upon the manner of arranging an exhibit of extracted than of comb honey, and for that reason, as well as to give a higher number of points to style of package, a smaller scale is allowed for style of display.

SAMPLES OF COMB AND EXTRACTED HONEY.

Rule 1. Single cases of comb honey, entered as such for separate premiums, should be judged by substantially the same rules as those given for a display of comb honey, and samples of extracted, by those governing displays of extracted honey.

Rule 2. Samples of comb or extracted honey, as above, may be considered as part of the general display in their respective departments.

GRANULATED HONEY.

Rule 1. Candied or granulated honey should be judged by the rules for extracted honey, except as below.

Rule 2. Points of quality should be:

Variety	10	Style of package	10
Fineness of grain	5	Variety of package	5
Color	5	Finish	5
Flavor	5		

Rule 3. An exhibit of granulated honey may be entered or considered as part of a display of extracted honey.

NUCLEI OF BEES.

Rule. Bees in observation hives should be marked on a scale of 100, as follows:

Color and markings	30	Quietness	5
Size of bees	30	Style of comb	5
Brood	10	Style of hive	10
Queen	10		

Remarks: 1. Bees should be exhibited only in the form of single frame nuclei, in hives or cages with glass sides.

2. Italian bees should show three or more bands, ranging from leather color to golden or light yellow.

3. The markings of other races should be those claimed for those races in their purity.

4. A nucleus from which the queen is omitted should score zero on that point.

5. The largest quantity of brood in all stages or nearest to that should score the highest in that respect.

6. The straightest, smoothest and most complete comb with the most honey consistent with the most brood, should score the highest in that respect.

7. That hive which is neatest and best made and shows the bees, etc., to the best advantage should score the highest.

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4. A nucleus from which the queen is omitted should score zero on that point.

5. The largest quantity of brood in all stages or nearest to that should score the highest in that respect.

6. The straightest, smoothest and most complete comb with the most honey consistent with the most brood, should score the highest in that respect.

7. That hive which is neatest and best made and shows the bees, etc., to the best advantage should score the highest.

QUEEN BEES.

Rule. Queen bees in cages should be marked on a scale of 100, as follows:

Quantity ..... 40 Quality and variety..... 40
Style of caging and display..... 20

Remarks: 1. The best in quality consistent with variety should score the highest. A preponderance of Italian queens should overweigh a preponderance of black ones, or, perhaps, of any other race or strain; but sample queens of any or all varieties should be duly considered. Under the head of quality should also be considered the attendant bees. There should be about a dozen with each queen.

2. Neatness and finish of cages should receive due consideration, but the principal points in style are to make and arrange the cages so as to show the inmates to the best advantage.

BEESWAX.

Rule. Beeswax should be marked on a scale of 100, as follows:

Quantity ..... 40 Quality 40
Style of display..... 20

Remarks: 1. Pale, clear, yellow specimens should score the highest, and the darker grades should come next in order.

2. By style is meant chiefly the forms in which the wax is molded and put up for exhibition. Thin cakes or small pieces are more desirable in the retail trade than larger ones. Some attention may be given to novelty and variety.

FOULBROOD IN BEES.

So important it is to be well posted on the two most important, and likewise most destructive, diseases of bees, that a full description of the diseases and their treatment is herewith given. These are taken verbatim from Bulletins Nos. 2 and 5 of the Michigan Apiary Inspection Division and were written by Michigan's former State Bee Inspector, Mr. B. F. Kindig.

AMERICAN FOULBROOD.

American foulbrood is an infectious disease of the larvae of the honey bee.

CAUSE.

The disease is caused by a microscopic organism similar in appearance and habits to some of the germs which cause disease in the human body. The organism is known as *Bacillus larvae.*

SYMPTOMS.

To the beekeeper who is unfamiliar with this disease, usually the first symptoms apparent are a gradual weakening of the colony and the presence of a very unpleansant odor in the hive. In the very early stages of the disease it is recognized by an occasional brood cell capping being sunken and darker in appearance than the cappings of the adjacent cells. A part of these cappings may also have small holes in them, often ragged in appearance. Upon further examination it may be found that in a few uncapped cells the larvae have died and are decaying on the lower cell walls. Upon careful examination, the dead larval remains in all the cells just mentioned will be found to be similar in shape and position, although they may vary somewhat in color. Soon after the death of the larvae it begins to take on a brownish appearance and the longer the larvae has been dead and the more it becomes dried down the darker is the color. When the remains have dried down to a thin scale on the lower cell wall the color becomes almost black. When larvae die from this disease the decayed remains tend to become quite gluey in their consistency. If a match or tooth-pick be inserted into the cell and a part of the remains drawn out it will be found to stretch out somewhat like glue. This quality is commonly spoken of as ropiness and is often considered the diagnostic symptom of this disease. However, in making a diagnosis these four factors should be present:

(1) The larval should lie on the lower cell wall.
(2) The color should be brown or black.
(3) The consistency of the larvae should be ropy unless dried down into a black hard scale.
(4) The odor should be repulsive, inasmuch as it is commonly described as smelling like a glue pot.

Even in a very mild case of disease the first three symptoms should be apparent while the fourth (the odor) may not be so noticeable if only a few cells are affected. Whenever there is the slightest doubt as to the diagnosis of disease a sample of the comb containing the diseased larvae should be sent to the U. S. Department of Agriculture, Bee Culture Labor-

atory, Washington, D. C., where a microscopic examination will be made. Upon application, the department will gladly furnish a mailing case for sending it samples of comb for disease identification.

TREATMENT.

The only successful treatment for American foulbrood consists in removing the bees from the combs and hives and placing them in a clean hive without combs but in which the frames are fitted with full sheets of foundation. There are slight variations in the method of treatment according to the season of the year. These slight differences will be fully discussed under the method of treatment for the particular season. If it is at all possible to avoid it, a diseased colony should never be treated in the same yard with colonies that are not diseased. Wherever possible, the diseased colonies should be removed a mile or more from the yard, given the proper treatment and then returned to the yard. Whenever treating for disease one should give due consideration to the location of other beekeepers in order that disease may not be spread by robbing during the process of treatment.

SPRINGTIME TREATMENT.

When it is desired to treat the bees in the spring as early as possible and when more than one colony is diseased, it is possible to save the brood of each colony excepting the last one treated by the following plan:

Pick out from among the diseased colonies the ones which are deemed strong enough to stand the shock of treatment during the month of May. Each of these colonies should be transferred into clean hives with full sheets of foundation and the brood which they had should be placed on one or more of the weaker diseased colonies. In the process of transferring, the diseased colony is placed two feet or so to the back side of where it formerly stood. The hive into which it is desired to transfer the bees is placed on the old stand. After placing a newspaper in front of the hives to catch any honey that may drip, then taking one frame at a time the bees should be brushed upon the paper in front of the new hive. Care should be used to see that the queen enters the new hive. After she is in, a queen-guard or queen and drone trap should be placed on the entrance to prevent the swarm from absconding. After all the bees have been removed, the combs may be placed on another diseased colony, as said before. If only one colony is affected then the combs should be buried deeply or burned. In all of the manipulations concerned with the handling of disease every precaution must be used in order that no robbing may take place. If any robbing occurs it is quite certain that each colony concerned in the robbing will later become diseased. For this reason it is customary to treat diseased bees late in the evening after the bees quit flying. If it is necessary to treat them in a yard where there are healthy colonies, then the entrances to all the adjacent healthy colonies should be closed with a screen so that in the excitement and confusion incident to transferring if any of the bees from the diseased hive attempt to enter they will be unable to do so. If it is impracticable to remove the bees from the yard for treatment, then the hives should be moved a foot or more each day until the diseased hives are as far as they can be placed in the yard from other colonies. Many beekeepers who have treated disease from year to year find it advisable to use a screened cage about six feet square and six feet high. They perform all of the work of transferring within this cage. In this way it is impossible for robbers to enter or for any of the bees of the colony to enter another hive. Whenever bees are disturbed as in transferring they fill their honey sacs with honey. In case it is a diseased colony the honey which they carry may transmit disease to any colony which such bees may enter. It is, therefore, very essential that all of the bees of a diseased colony be kept together. Colonies which are strong enough to admit of treatment in the month of May should build up and store a satisfactory amount of honey during the following honeyflow.

SUMMER TREATMENT.

Weak colonies on which the brood was stacked from the colonies treated in May, or other colonies which were too weak for treatment at that time, should be treated during the first few days of the main summer honeyflow, which in this State is either the basswood or clover flow. The same method of treatment should be followed as described previously, excepting that in case some colonies are not strong enough at that time to produce surplus honey, then, two or more colonies should be united at the time of treatment. It is not advisable to handle colonies in such a way that the surplus honey crop is entirely sacrificed. If an increase in the number of colonies is desired, it can be made in the latter part of the clover flow with but very slight sacrifice in the honey crop. The brood from five or six treated colonies can be piled upon one diseased colony and after three weeks when all of the brood is hatched, then the remaining colony should be treated. Whether or not all of the colonies are to be treated at the beginning of the main honey flow is optional with the beekeeper. If they are all treated at that time all frames containing brood must be burned or buried at once. If some of the diseased colonies are still weak it is probably best to pile the brood from those that are strong enough on them and arrange to treat three weeks later. However, when treatment is delayed until three weeks after the beginning of the honey flow in some instances not sufficient time is left for them to store honey enough for their needs. In this case they will have to be fed later.

FALL TREATMENT.

It occasionally happens that a colony which becomes infected in the spring may not be discovered until after the clover honey crop has been gathered. In general, it is not advisable to treat bees when there is no honey flow. The danger of robbing under such condition is very much greater and feeding must be restored to in order to keep the colony alive. Late cases of infection may be treated during the month of October after brood rearing has practically ceased. The method of treatment is the same as described before, excepting that the bees are transferred into a hive without frames. They should be left in this hive for at least 48 hours. At that time the beekeeper should carefully remove the hive body from the bottom board. A hive body full of combs of honey taken from a healthy colony should be set in its place. Then the empty hive body with the bees should be set on top and jarred slightly. The bees will then take possession of the combs and honey and the empty hive body may be removed.

FEEDING IN CONNECTION WITH TREATMENT.

When it is desirable to treat very early in the season it is occasionally necessary to resort to feeding in order to get the foundation drawn out and to get brood rearing under way as quickly as possible. Realizing that the bees carry with them a supply of honey which is sufficient for their food for several days, it is not necessary to do any feeding until two or three days after treatment. It is very fortunate that in the digesting of the disease-carrying honey which the bees have in their honey sacs at the time of treatment, all danger of disease is eliminated. When bees are placed on foundation they very rapidly use up the honey which they have with them in the secretion of wax for comb building. For this reason it is not advisable in treating disease to give the colony a set of drawn combs. When this is done they deposit the honey which they carry with them in the cells and part of it is fed to the young larvae which they proceed to rear. Thus the disease which was present in the old hive is continued in the new one. When it is necessary to feed, the use of a Boardman entrance feeder or an Alexander bottom board is very convenient. If these are not at hand a very efficient feeder can be made by punching a number of fine holes in the lid of a friction top pail. This should be filled with syrup and inverted directly over the frames. The bees will then suck out the syrup.

DISPOSAL OF WAX AND HONEY.

Where only a small number of colonies are treated the best means of disposal of the frames and honey is to burn or bury them. In cases where a large yard is quite generally diseased it then becomes advisable to save as much of the equipment as possible. After the brood has been allowed to emerge as previously mentioned, then the hive bodies of combs should be removed to a bee-tight building. There the honey should be extracted at once. The honey may be used for making honey vinegar. It is not desirable to sell this honey as it may be exposed by the purchasers in such a way that bees may secure some of it and thus carry the disease to their own hives.

After extracting, unless a very cold cellar is available for storing the combs, it is necessary to cut the combs out and melt them at once because of the danger of wax moths at that season. No one should ever attempt to ship diseased combs to a foundation factory for rendering, excepting during the months of December, January and February. When combs are packed in a barrel and shipped, very often honey leaks out upon the floors of the cars or in the freight house and becomes accessible to the bees of the vicinity. This practice is forbidden by law in most states including Michigan.

After disposing of the combs and honey the frames should be boiled for not less than five minutes in a solution made from one can of concentrated lye to six gallons of water. Before placing the frames in this solution the wax and propolis should be carefully removed. After boiling, the frames should be thoroughly rinsed in a tub of clear, warm water. The hive bodies, super covers and bottom boards, should be thoroughly scraped to remove all particles of wax, honey and propolis. Then they should be gone over with a flame of a blow torch and the surface scorched until no germs can remain alive. Ordinarily supers and hive bodies are more easily sterilized by piling them up-side-down as high as one can conveniently reach and burning a small handful of straw or paper on the inside. Care must be exercised else the whole pile of supers will be burned up. A hive cover should be convenient for putting over the top to stop the blaze.

It must be realized that there is grave danger in the handling of diseased material unless every precaution is taken to prevent robbing. The extractor should be thoroughly scalded out after extracting diseased honey. If possible the extractor should be taken to where it may be turned up-side-down and a steam hose turned into it with considerable pressure for at least 15 minutes. If the wax is rendered, the slumgum and the water used in wax rendering should be buried after the bees have quit flying in the evening. All vessels or tools which come in contact with the disease must be thoroughly disinfected. If the above directions are followed carefully much valuable material may be saved. If not, foulbrood will be scattered far and wide over the adjacent territory.

METHODS OF SPREAD.

American foulbrood is commonly spread through carelessness on the part of someone. If carelessness on the part of beekeepers could be eliminated the problem of controlling foulbrood would be very much simplified. Weak diseased colonies may be robbed out because the entrances have not been contracted to a point where they can defend themselves. Dead diseased colonies are robbed out because the beekeeper carelessly leaves such colonies exposed in the bee-yard. It is a beekeeper's business to know whether any colonies are dead or weak, and it is his business to take care of them so that they may not be a menace to the neighboring beekeepers. The careless exposure of disease-carrying honey and the like is criminal and the offender should be punished by nothing less than confinement in the county jail. Often honey houses and other places where diseased honey and combs are stored have cracks in the doors or windows or the siding does not fit prop-

erly and whatever is contained therein is exposed to all of the bees in the territory. Often hives in which the colonies have died from disease are sold either through egnorance of the seller, or as has been amply demontrated, because his sense of right and justice has never been properly developed. A careful survey of conditions in Wisconsin showed that a large part of the spread of foulbrood was directly traceable to the selling or moving of diseased hives or equipment. The feeding of honey, a part of which was extrated from a diseased colony, causes an outbreak of disease wherever such honey is fed. It is not always possible to know whether or not some of it may have come from a diseased hive even though no disease is known to be present in the bee-yard. Some of the honey in the yard may have been stored from honey robbed from a diseased colony in the neighborhood.

BEE-YARD SANITATION.

The bee-yard practice must be such as to prevent robbing.

Frames of honey should not be taken from one colony and given as food to another colony.

A diseased colony should never be opened when there is the slightest danger of robbing.

Diseased colonies should be removed from the yard as soon as discovered and treated before returning them.

Carelessness, ignorance and malice are at the bottom of most of the spread of disease.

Do not use equipment from an unknown source without seeing to it that it cannot carry disease.

When a colony shows disease every frame connected with that colony must be destroyed. Some have erroneously judged that those frames which do not have dead larvae in them are suitable for further use.

In purchasing bees buy them in combless packages, not on drawn combs, unless there has been no disease among the bees for at least one year. The selling of diseased bees contributed largely to the spread of disease in Michigan.

Every super and every frame should be numbered to correspond with the hive on which it belongs and should be used there and nowhere else. If this suggestion is followed, extracted honey producers will find that foulbrood is just as easy to control in their yards as in the yards of comb honey producers.

EUROPEAN FOULBROOD.

European foulbrood is a bacterial disease which causes the death of the larvae of workers, queens and drones. It attacks them normally when they are about three days old and usually kills them before the cells are capped. The disease is quite variable in its severity; in some cases most of the uncapped larvae are affected, while in other colonies or under different conditions of season or honeyflow, but very few larvae may be attacked.

DISTRIBUTION.

European foulbrood is found in nearly all sections of the country, and in Illinois is prevalent in Central and Northern Illinois. Several years ago Dr. E. F. Phillips of the Bureau of Entomology, United States Department of Agriculture, called the attention of the writer to what seemed to be a striking coincidence, in that European foulbrood seemed to be particularly virulent on the poorer types of soil. The truth of this statement seems to be well borne out in the distribution of the disease in the various counties While the disease is frequently met with on the heavier types of soil, yet it appears as a serious menace largely on the lighter soils where there is but little incoming nectar during the spring and early summer months. There are many counties in the State from which the disease has not been

reported. This should not be construed to mean that such territories are immune from the malady. On the contrary, it seems to be purely an accident that this trouble has not appeared in many of these counties.

PREDISPOSING CONDITIONS.

As noted above, areas in which there are but few nectar-secreting flowers during the early part of the season seemed to be favorable for the development of the disease. As Italian bees are essential for the control of this disease, it therefore follows that in those communities where the black bees predominate European foulbrood is particularly serious. It has also been noted that the poor wintering of bees is exceedingly favorable to rapid progress of the disease. Those colonies are particularly susceptible which are weak in numbers and slow to build up either because of insufficient strength or because of the presence of a failing queen.

STRENGTH OF COLONY IN RELATION TO DISEASE.

Strong colonies of bees attempt to eradicate the disease from the hive by carrying out the dead larvae. This reminds one of the reaction of a strong colony to the presence of wax moths. Weak colonies seem to make but little effort to clean out the diseased larvae as they appear. The carrying out of the dead larvae seems to be an important factor in retarding the spread of the disease within the colony. Nurse bees have often been observed sucking the juices from the bodies of the dead larvae. Doubtless the nurse bees, because of their contamination with the bacteria form the principal agency in the dissemination of the disease within the hive.

Very little is definitely known regarding the spread of the disease from hive to hive or from one apiary to another. It has been definitely shown, however, that the disease can be transferred by the agency of the honey taken from the diseased colonies.

DIAGNOSIS.

The larvae are first affected by European foulbrood while they are curled up in the backs of the cells adjacent to the midrib of the comb. Frequently the larvae seem to move slightly before death and dead larvae change in color from pearly white to gray or yellow, and if permitted to remain in the cells they may become a yellowish brown or brown in color. The larvae do not adhere tightly to the cell walls. In serious cases there is usually a decided odor. There is but slight ropiness, if any at all. Queen, worker, and drone larvae seem to be equally susceptible to the disease.

In case of any doubt in diagnosis of disease, write to the Bee Culture Laboratory, Department of Agriculture, Washington, D. C., asking for a box in which to mail a sample of the diseased comb. The comb should not be wrapped in waxed paper nor mailed in tin containers.

TREATMENT.

During the past ten years the methods of treatment for European foulbrood have been changed quite radically. The transferring of the bees from the diseased hive is no longer advocated.

E. W. Alexander of New York and Dr. C. C. Miller of Illinois, demonstrated conclusively that the destruction of combs and the loss of brood were unnecessary in treating this disease. Dr. E. F. Phillips has summed up the whole matter of preventive measures: "The practices of good beekeeping are those which result in the eradication of European foulbrood."*

Every beekeeper should look forward to the possibility of European foulbrood becoming epidemic in his apiary. Preventive measures are therefore indicated rather than awaiting the coming of the disease and then

attempting to remedy the situation. The following points are particularly important in this connection: Young queens, an abundance of food, suitable winter protection, Italian blood, and strong colonies.

In combating the disease after it has appeared, the queens of the diseased colonies should be killed and Italian queens of known resistance should be introduced as soon as the bees have had an opportunity to free the combs from all dead larvae. The length of time required for removing the dead larvae depends upon the race of bees and strength of the colonies as well as the amount of infection present. If colonies are weak, it is frequently desirable to unite two or more colonies. The uniting of two weak discouraged diseased colonies frequently results in a complete change of morale and a quick cleaning up of the diseased material.

In those apiaries where most colonies are headed with resistant stock, it is unnecessary to send away for queens. Ripe queen cells from the best queens may be introduced into the colonies at the time the old queens are killed or a few days later, depending upon the severity of the disease. If the cells are introduced some time after the removal of the queens, then a careful examination of the combs must be made and all queen cells removed before introducing the ripe cells. Negligence in this matter may result in a hopelessly queenless colony due to the destruction by the bees of the cell introduced and by the blasting of the cells reared by the colony because of the disease present.

In connection with the treatment for disease, beekeepers frequently find it advantageous to feed a thin syrup at frequent intervals. After requeen ing all diseased colonies the beekeeper should keep very close watch of the performance of the various queens. He should begin rearing young queens from those queens which seem to produce colonies most resistant to the disease. The beekeeper should not depend entirely upon purchasing queens from regular queen breeders. He should learn to rear his own queens from those which he knows are fully capable of carrying their colonies through the season without a severe outbreak of disease. The vigor of a queen seems to be impaired by shipping through the mail. Vigor is of exceeding importance in queens in apiaries where disease is present.

*Farmers' Bulletin 975, "The Control of European Foulbrood," by Dr. E. F. Phillips.

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